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VOLUME XVIII
Number 4

ASTOUNDING STORIES

DECEMBER
1936

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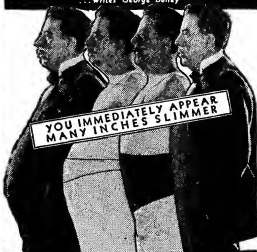
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TRYST in TIME

*Science opens the portals
to the only real adventures!*

by C. L. MOORE

ERIC ROSNER at twenty had worked his way round the world on cattle boats, killed his first man in a street brawl in Shanghai, escaped a firing squad by a hairbreadth, stowed away on a pole-bound exploring ship.

At twenty-five he had lost himself in Siberian wilderness, led a troupe of Tatar bandits, commanded a Chinese regiment, fought in a hundred battles, impartially on either side.

At thirty there was not a continent nor a capital that had not known him, not a jungle nor a desert nor a mountain range that had not left scars upon his great Viking body. Tiger claws and the Russian knout, Chinese bullets and the knives of savage black warriors in African forests had written their tales of a full and perilous life upon him. At thirty he looked backward upon such a gorgeous, brawling, color-splashed career as few men of sixty can boast. But at thirty he was not content.

Life had been full for him, and yet as the years passed he was becoming increasingly aware of a need for something which those years were empty of. What it was he did not know. He was not even consciously aware of missing anything, but as time went on he turned more and more to a search for something new—anything new. Perhaps it was his subconscious hunting blindly for what life had lacked.

There was so very little that Eric Rosner had not done in his thirty riotous years that the search for newness rapidly

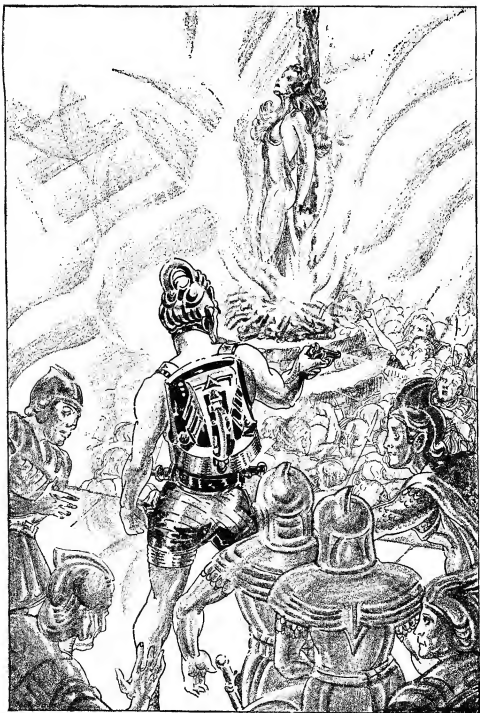
became almost feverish, and almost in vain. Riches he had known, and poverty, much pleasure and much pain, and the extremes of human experience were old tales to him. Ennui replaced the zest for living that had sent him so gayly through the exultant years of his youth. And for a man like Eric Rosner ennui was like a little death.

Perhaps, in part, all this was because he had missed love. No girl of all the girls that had kissed him and adored him and wept when he left them had mattered a snap of the fingers to Eric Rosner. He searched on restlessly.

In this mood of feverish hunting for new things, he met the scientist, Walter Dow. It happened casually, and they might never have met a second time had not Eric said something offhand about the lack of adventure which life had to offer a man. And Dow laughed.

"What do you know about adventure?" he demanded. He was a little man with a shock of prematurely white hair and a face that crinkled into lines of derision as he laughed. "You've spent your life among dangers and gunfire—sure! But that's not real adventure. Science is the only field where true adventure exists. I mean it! The things that are waiting to be discovered offer fields of excitement like nothing you ever heard of. One man in a lifetime couldn't begin to touch the edges of what there is to know. I tell you I—"

"Oh, sure," interrupted Eric lazily. "I see what you mean. But all that's



Choked with terror, Eric swung up his gun hand. The report sent the strange people to their knees in terror.

not for me. I'm a man of action; I haven't any brains. Hunching over a microscope isn't my idea of fun."

THE ARGUMENT that began then developed into a queer sort of antagonistic friendship which brought the two men together very often in the weeks that passed. But they were to know one another much more intimately than that before the true urgency of what lay in the minds of each became clear to the other.

Walter Dow had spent a lifetime in the worship of one god—inertia. "There is a bedrock," he used to say reverently, "over which the tides of time ebb and flow, over which all things material and immaterial, as the layman sees them, change and fade and form again. But the bedrock remains. Complete inertia! What couldn't we do if we attained it!"

"And what," asked Eric, "is inertia?"

Dow shot him a despairing glance.

"Everybody knows what inertia is. Newton's first law of motion is the law of inertia, stating that every body remains in a state of rest or of uniform motion in a straight line unless impressed forces change it. That's what makes people in a moving car swerve to one side when the car goes round a bend. It's what makes it so difficult for a horse to start a heavy load moving, though once it's in motion the strain eases. There's nothing that doesn't obey the law—nothing!"

"But Newton didn't dream what measureless abysses of force lay behind his simple statement. Or what an understatement it was. Describing inertia by stating Newton's law is like describing the sea by saying there's foam on the waves. The inertia force is inherent in everything, just as there's moisture in everything. But behind that inertia, manifest so obscurely in matter, is a vastness of power much greater comparatively than the vastnesses of the seas which are the storehouses for the rela-

tively tiny amounts of moisture in everything you see.

"I can't make you understand; you don't speak the language. And I sometimes wonder if I could explain even to another physicist all that I've discovered in the past ten years. But I do very firmly believe that it would be possible to anchor to that bedrock of essential, underlying inertia which is the base upon which matter builds and—allow time itself to whirl by!"

"Yeah, and find yourself floating in space when you let go." Eric grinned. "Even I've heard that the universe is in motion through space. I don't know about time, but I'm pretty sure space would block your little scheme."

"I didn't mean you'd have to—to dig your anchor right into the rock," explained Dow with dignity. "It'd be a sort of a drag to slow you down, not a jerk that would snatch you right off the Earth. And it'd involve—immensities—even then. But it could be done. It will be done. By Heaven, I'll do it!"

Eric's sunburned face sobered.

"You're not kidding?" he asked. "A man could—could drag his anchor and let time go by, and 'up-anchor' in another age? Say! Make me an anchor, and I'll be your guinea pig!"

Dow did not smile.

"That's the worst of it," he said. "All this is pure theory and will have to remain that, in spite of all I've bragged. It would be absolutely blind experimenting, and the very nature of the element I'm experimenting with precludes any proof of success or failure. I could—to be frank with you I *have*—sent objects out through time—"

"You have!" Eric leaned forward with a jerk and laid an urgent hand on Dow's arm. "You really have?"

"Well, I've made them vanish. I think it proves I've succeeded, but I have no way of knowing. The chances are countless millions to one against my landing an experiment in my own im-

mediate future, with all the measureless vastness of time lying open. And, of course, I can't guide it."

"Suppose you landed in your own past?" queried Eric.

Dow smiled.

"The eternal question," he said. "The inevitable objection to the very idea of time travel. Well, you never did, did you? You know it never happened! I think there must be some inflexible law which forbids the same arrangement of matter, the pattern which is one's self, from occupying the same space time more than once. As if any given section of space time were a design in which any arrangement of atoms is possible, except that no pattern may appear exactly twice.

"You see, we know of time only enough to be sure that it's far beyond any human understanding. Though I think the past and the future may be visited, which on the face of it seems to predicate an absolutely preordained future, a fixed and unchangeable past—yet I do not believe that time is arbitrary. There must be many possible futures. The one we enter upon is not the only way. Have you ever heard that theory explained? It's not a new one—the idea that at every point of our progress we confront crossroads, with a free choice as to which we take. And a different future lies down each.

"I can transport you into the past, and you can create events there which never took place in the past we know—but the events are not new. They were ordained from the beginning, if you took that particular path. You are simply embarking upon a different path into a different future, a fixed and preordained future, yet one which will be strange to you because it lies outside your own layer of experience. So you have infinite freedom in all your actions, yet everything you can possibly do is already fixed in time."

"Why, then—then there's no limit to

the excitement a man could find in navigating time," said Eric almost reverently. And then in sudden urgency, "Dow, you've got to fix it up for me! This is what I've been hunting!"

"Are you crazy, boy? This is nothing that can ever be proved safe except by the actual experiment, and the experiment could never return. You know that, don't you? From what blind groping I've done, it seems to me that time is not a constant flow, but an ebb and flux that can't be measured. It would be hard to explain to you. But you couldn't return—couldn't guide yourself. You wouldn't dare try it!"

"I'm fed up with certainty and safety! And as for returning, what have I here to return to? No, you can't scare me. I've got to try it!"

"Absolutely no," said Dow firmly.

BUT three months later he was standing under the great skylight of his laboratory, watching Eric buckle a flat metal pack on his heavy young shoulders. Though reluctance still lined the scientist's face, under its shock of white hair he was alight almost as hotly as the younger man, with the tremendous adventure of what was about to happen. It had taken weeks of persuasion and argument, and he was not wholly at ease even yet about the experiment, but the fever that burned in Eric Rosner was not to be denied.

Now that the way was open, it seemed to Eric that all his life he had lived toward this moment in the laboratory. The need for this launching upon time's broad river was what had driven him restless and feverish through the petty adventures which life had shown him. Peace was upon him now for the first time in months. There was something rather awe-inspiring about it.

"Look here," broke in Walter Dow upon the raptness of his mood. "Are you sure you understand?"

"I don't understand anything about

the works, and I don't much care," said Eric. "All I know is I'm to snap these switches here"—he laid big sunburned hands on the two rods at his belt—"when I want to move along. That will throw out the anchor. Right?"

"As far as it goes, yes. That will increase your inertia sufficiently to make you immune to time and space and matter. You will be inert mentally and physically. You'll sink down, so to speak, to the bedrock, while time flows past you. I have in this pack on your back, connecting with the switches in the belt, the means to increase your inertia until no outside force can interrupt it. And a mechanism there will permit the switches to remain thrown until one small part, insulated from the inertia in a tiny time space of its own, trips the switches again and up-anchors. And if my calculations are correct—and I *think* they are—there you'll be in some other age than ours. You can escape from it by throwing the switches again and returning to inertia, to be released after an interval by the automatic insulated mechanism in your pack. Got it?"

"Got it!" Eric grinned all over his good-looking, sunburned face. "Everything ready now?"

"Yes—yes, except that—are you sure you want to risk it? This may be plain murder, boy! I don't know what will happen!"

"That's the beauty of it—not knowing. Don't worry, Walter. Call it suicide, not murder, if that helps you any. I'm going now. Good-by."

Dow choked a little as he gripped the younger man's hand hard, but Eric's face was shining with the fever to be gone, and at the last the scientist was almost reconciled by the sight of that rapt face. Almost he saw in the last instant before the switches closed a purpose vaster than his own, sweeping the work of his hands and the exultant

young man before him into a whole that fulfilled some greater need than he could guess.

Then Eric's hands dropped to his belt. One last instant he stood there, tall under the clear radiance of the skylight, blond and sunburned, the tale of his riotous, brawling life clear upon his scarred, young face, but upon it, too, a raptness and an eagerness that sent a quick stab of unreasoning hope through the scientist's mind. Surely success would crown this experiment. Surely all the vital, throbbing aliveness, the strength and seasoned toughness of this brawny young man before him could not snuff into nothing as the switches closed. Danger awaited him—yes, danger against which the gun at his belt might not avail at all. But splendor, too. Splendor—Envy clouded Dow's eyes for a moment, as the switches closed.

II.

PAST ERIC'S EYES eternity ebbed blindingly. Rushing blankness closed over him, but he was conscious of infinite motion, infinite change passing over him, by him, through him, as events beyond imagination streamed past that anchorage in inertia's eternal bedrock. For a timeless eternity it lasted. And then—and then—

A confusion of noises from very far away began to sound in his ears. That rushing blurriness abated and slowed and by degrees took on a nebulous shape. He was looking down from a height of about thirty feet upon a street scene which he identified roughly as Elizabethan by the costumes of those who moved through the crowd below him.

Something was wrong. The machine could not have worked perfectly somehow, for he did not feel that he was actually present. The scene was uncertain and wavery, like a faulty film reflecting upon an uneven screen. There must have been an obstruction some-

where in that particular time section, though what it was he never knew.

He leaned forward for a few minutes, looking down eagerly through the hazy uncertainty that shrouded the place. He did not seem to himself to be resting on anything; yet he was conscious of that forward bending as he looked down. It was inexplicable.

The noises rose up to him now loudly, now softly, from the shifting, pushing throng. Shopkeepers hawled their wares from both sides of the street. Apprentice boys darted to and fro through the crowd, waylaying passers-by.

A girl in a scarlet cloak flung open a window and leaned out to wave a message to some one below, her bright hair falling about her face. In the room behind her, dimly seen, another girl moved forward and flung both arms about her waist, laughing, dragging her back. Their merriment rose clearly to Eric's ears.

But all this was not real. That cloudiness hazed it over time and again, until his eyes ached from trying to follow what was happening. Regretfully, he reached for the switches at his belt, and in a breath the whole place shimmered and vanished. Oblivion in a torrent poured over him as the centuries plunged by over the bedrock inertia to which he was anchored.

The automatic workings of the time machine on his shoulders clicked on. Then the switches threw themselves and the blankness cleared from Eric's mind again. He found himself staring through a screen of leaves upon a grassy meadow through which tickled a small brook. He was tangibly, actually here this time, standing on soft turf and feeling stir of a breeze through the leaves.

Over the slope of the meadow before him dingy white sheep moved slowly. A little curly-haired boy in a brief leather garment leaned on the grass

drowsily, watching them. Sun lay yellow over the whole scene. It was peaceful and dreamy as an idyl, but for some obscure reason Eric's hands moved to his belt almost of their own accord, a feeling of disappointment stirring vaguely in his mind. This was not what he sought. Sought? Was he seeking? Almost one might think so, he told himself.

The thought troubled him as he clicked the switches at his belt. What was it that by its absence here made him dismiss the idyllic scene with a glance? He was hunting something, restlessly searching through the ages for—something. Then the tidal rush of the centuries over his anchorage blotted out wonder and all else in its oblivion.

SUNLIGHT like a physical blow crashed down about him—blazing hot sun that beat violently upon marble pavement and struck blindingly up again into his eyes. For a few seconds he was aware of nothing more than this intolerable glare. Gradually out of the blazing heat the lines of marble walls became clear about him. He stood upon the floor of a dazzling white marble pit about twenty feet square. Against the opposite wall lay a man whose naked, blood-spattered body was so still under the down-blazing heat that Eric could not be sure that he was alive.

He had seen this much before the rising babble of excited voices above him mounted loud enough to pierce his dazed surprise. He looked up. Leaning over the pit's rim were faces—faces and arms and here and there a trail of velvet robe, a bright scarf's fringe. They were the faces of aristocrats, fine and dissipated and cruel. But all expression was wiped from every one now.

In that first glance he had of them he thought they must be Romans. He had little to judge by save their hair dressing, and only a momentary glimpse of that; for, as he raised his head, his

eyes met the strange, smoke-blue eyes of a woman who leaned upon the marble rim just in front of him, and above. A little space separated her from those on each side. He had the swift impression that she was of higher rank than the rest—some fleeting touch of arrogance and pride in the face looking down on him. And it was a familiar face. Why he could not guess, but in that glimpse of her he was sure that he had seen those features somewhere before, and recently.

Then she lifted one bare arm upon whose whiteness the sun struck daz-zlingly, and pointed downward. From behind her came the sound of metal upon stone, and in the blinding light he saw a man's arm move swiftly. The sun struck upon a long shaft of steel. The spear was hurtling straight for his breast as his hands flew to his belt. The switches clicked, and in one great sweeping blur the whole scene vanished.

After that came a blurry interval of unthinkable inertness. The centuries passed past. Then reality burst upon him again as the switches clicked off. He choked suddenly and gasped as air thicker and moister than the air of a tropical swamp smothered his lungs. He stood there for a moment struggling with it, forcing himself to evener breathing, as his bewildered gaze swept the scene before him.

He stood in a square of ruined walls that must once have been a small building, though roof and sides had vanished now and little was left but a crumbling square outlining the long-fallen house. To one side a higher heap of stone, which was all that was left of the western wall, obstructed his view of what lay beyond. Over the fallen blocks before him he could see a vast paved square dotted with other buildings fallen into ruin. And beyond these, under a heavily clouded sky through which the obscured sun poured in a queer, grayly radiant light, buildings of barbaric col-

ors and utterly alien architecture lifted their Cyclopean heights, massive as the walls of Karnak, but too strangely constructed to awake any memories.

Even at this distance he recognized those darker blotches upon the tremendous walls as the sign of a coming dissolution. It was a city more awfully impressive than any he had ever dreamed of, standing gigantic under the low, gray sky of this swamplike world—but its glory was past. Here and there gaps in the colossal walls spoke of fallen blocks and ruined buildings. By the thick, primordial air and the swamp smell and the unrecognizable architecture he knew that he gazed upon a scene of immortal antiquity, and his breath came quicker as he stared, wondering where the people were whose Cyclopean city this was, what name they bore and if history had ever recorded it.

A MEDLEY of curious sounds coming nearer awoke him from the awed trance into which he had sunk. Feet shuffling over pavement, the clang of metal shivering against metal, hoarse breathing, and a strange, intermittent hissing he could not account for. It came from that part of the great square which the crumbling wall beside him hid.

That queer hissing sounded loud. Some one yelled in a growling guttural, and he heard the beat of running feet, staggering and uncertain, coming nearer. Then a figure that was a dazzle of white and scarlet flashed through the aperture in the crumbling wall where a door must once have been. It was a girl. Her choked breath beat loud in the narrow place, and the scarlet that stained and streaked her was bright blood that gushed in ominous spurts from a deep gash in her side. She was incredibly white in the sunless day of this primordial city. Afterward he could never remember much more than that—her dazzling whiteness and the blood pumping in measured spurts from severed

arteries—and the smoke blueness of her eyes.

He did not know what she had worn, or anything else about her, for his eyes met the smoky darkness of hers, and for a timeless moment they stared at one another, neither moving. He knew her. She was that royal Roman who had condemned him to death in the sun-hot pit; she was the laughing, red-cloaked girl who had leaned from the Elizabethan window. Incredibly, unquestionably, they three were the same blue-eyed girl.

A yell and a scrambling sound outside roused her from her tranced stare. He wondered wildly if he had not seen puzzled recognition in her filming eyes in that one long instant before she swung staggering toward the door. He knew she was dying as she turned, but some inner compulsion held him back, so that he did not offer to support her, only stood watching. After all, there was no help for her now. The smoke-blue eyes were glazing and life gushed scarlet out of her riven side.

He saw her reel back against the broken wall, and again he heard that strange hissing as her right hand rose and from a shining cylinder grasped in it a long stream of blue heat flared. There was a yell from outside. A throbbing silence broken only by the spatter of the girl's blood on the pavement. And then something very strange happened.

She turned and glanced over her shoulder and her eyes met his. Something choked in his throat. He was very near understanding a great many things in that instant while her filming blue gaze held his—why he had felt so urgently all his life long the need of something he had never neared, until now— Words rushed to his lips, but he never spoke them. The instant passed in a flash.

The girl in that illuminating moment must have realized something yet hidden

from him, for her lips trembled and an infinite tenderness softened her glazing eyes. And at the same instant her hand rose again, and for the last time he heard that searing hiss. She had turned her nameless weapon upon herself.

In a flare of blue brilliance he saw her literally melt before his eyes. The stones glowed hot, and the smell of burned flesh filled the inclosure. And Eric went sick with a sensation of devastating loss. She was dead—gone—out of all reach now, and the universe was so empty that— He had no time to waste on his own emotion, for through the broken wall was pouring a mob of shambling things that were not yet men.

Big, hairy, apish brutes brandishing clubs and heavy stones, they surged in a disordered mob through the ruined stones. One or two of them carried curiously shaped rusty swords of no recognizable pattern. And Eric understood.

Dying, the girl would not leave even her untenanted body to their defilement. Pride had turned her hand to lay the consuming beam upon herself—an inbred pride that could have come only from generations of proud ancestry. It was a gesture as aristocratic and as intensely civilized as the weapon that destroyed her. He would have known by that gesture alone, without her flame-thrower or the unmistakable fineness of her body and her face, that she was eons in advance of the beasts she fled.

In the brief second while the brutes stood awed in the broken wall, staring at the charred heap upon the pavement and at the tall golden man who stood over it, Eric's mind was busy, turning over quick wondering and speculations even as his hands reached for the switches at his belt.

Her race must have reared that immense, unearthly city, long ago. A forgotten race, wise in forgotten arts. Per-

haps not born of earth. And the hordes of brutish things which would one day become men must have assailed them as time beat down their Cyclopean city and thinned their inbred ranks.

This girl, this unknown, unimaginably far-distant girl, perhaps star-born, certainly very alien—had died as all her race must be doomed to die, until the last flicker of that stupendous civilization was stamped out and earth forgot the very existence of the slim, long-legged human race which had once dwelt upon her surface when her own primordial man was still an apish beast.

But—they had not wholly died. He had seen her in other ages. Her smoky eyes had looked down upon him in the Roman pit; her own gay voice had called across the Elizabethan street. He was very sure of that. And the queer, stunning sense of loss which had swept over him as he saw her die lightened. She had died, but she was not gone. Her daughters lived through countless ages. He would find her again, somewhere, somehow, in some other age and land. He would comb the centuries until he found her. And he would ask her then what her last long stare had meant, so meltingly tender, so surely recognizing, as she turned the blue-hot blaze upon herself. He would—

A deep-throated bellow from the doorway in the wall startled him out of his thoughts even as he realized their absurdity. The foremost of the brute-men had overcome his awe. He lifted a rusty sword, forged by what strange hands for what unknown and forever forgotten purpose there was no way of knowing, and plunged forward.

Barely in time, Eric's hands closed on the switches and the stupendous, time-forgotten city swirled sidewise and melted forever into the abysses of the past.

In the mental and physical inertia that drowned him with its oblivion as the

current closed he waited moveless, and once more the centuries rushed by. The inexorable machinery clicked on. After a timeless interval light broke again. He awoke into more than tropical sultriness, the stench of mud and musk and welter of prehistoric swamps. There was nothing here save great splashing monsters and the wriggling life of hot seas. He flicked the switches again.

III.

THE NEXT TIME a broad plain surrounded him, featureless to the horizon, unrecognizable, and the next a horde of hairy, yelling men charged up a rocky hill upon whose height he had materialized. After that he visited and left in rapid succession a ruined temple in the midst of a jungle, a camp of ragged nomads with slant eyes and crooked legs, and an inexplicable foggy place through which reverberated the roar of staccato guns which sounded like no guns he had ever heard. Nowhere appeared the girl with the smoke-blue eyes.

He was beginning to despair, when, after so many flashing scenes that he had lost count of them, the darkness of rushing centuries faded into a dawning scene of noise and confusion. He stood upon the trampled earth of a courtyard, hot under the rays of a broiling, noon-high sun.

He heard shouts in an unknown tongue, the trample of horses' feet and the impatient jingle of harness, the creak of wheels. Through the shining dust that eddied, cloudlike, under the feet of the crowd that bustled about the inclosure, he made out a train of heavy wagons about which strange, short, bearded men swarmed in busy confusion, heaving crates and bales into the vehicles and calling in odd gutturals. Men on horseback galloped to and fro recklessly through the crowd, and the



There was something rather awe-inspiring about this launching upon time's broad river. In it the old scientist saw some purpose vaster than his own—

heavy-headed oxen stood in patient twos at each wagon.

Eric found himself in a corner of the low wall that circled the yard, and, in the tumult, quite unnoticed so far. He stood there quietly, hand resting lightly on the butt of his revolver, watching the scene. He could not guess where he was, in what land or time, in the presence of what alien race. The men were all little and dark and hairy, and somehow crooked, like gnomes. He had never heard a tongue like the gutturals they mouthed.

Then at the far side of the courtyard a lane opened in the crowd, and through it a column of the crooked brown men with curly-pronged pikes across their shoulders came marching. They had a captive with them—a girl.

A tall girl, slim and straight, high-headed. Eric leaned forward eagerly. Yes, it was she. No mistaking the poise of that high, dark head, the swing of her body as she walked. As she came nearer he saw her eyes, but he did not need the smoky blue darkness of them to convince him.

She wore manacles on her wrists, and chains clanked between her ankles as she walked. A leather tunic hung from one shoulder in tatters, belted at the waist by a twisted thong from which an empty scabbard swung. She walked very proudly among the gnarled soldiers, looking out over their heads in studied disdain. At a glance the high-bred aristocracy of her was clear, and he could not mistake the fact that her own people must be centuries in ad-

vance of the squat, dark race which held her captive.

The clamor had quieted now in the courtyard. Dust was settling over the long wagon train, the low-headed oxen, the horsemen stationed at intervals along the line. In silence, the crowd fell back as the soldiers and their aloof captive paced slowly across the courtyard. Tension was in the air.

ERIC had the vague feeling that he should know what was to come. A haunting familiarity about this scene teased him. He racked a reluctant memory as he watched the procession near the center of the great yard. A stone block stood there, worn and stained. Not until the tall girl had actually reached that block, and the soldiers were forcing her to her knees, did Eric remember. Sacrifice—always before a caravan set forth in the very old days, when the gods were greedy and had to be bribed with human lives.

His gun was in his hand and he was plunging forward through the startled crowd before he quite realized what he was doing. They gave way before him in sheer amazement, falling back and staring with bulging eyes at this sudden apparition in their midst of a tall, yellow-headed Juggernaut yelling like a madman as he surged forward.

Not until he had reached the line of soldiers did he meet any resistance. They turned on him in gutturally shouting fury, and he shot them down as fast as his revolver would pump bullets. At that range he could not miss, and six of the squat gnomes crumpled to the dust in a haze of blue gun smoke.

They must have thought him a god, dealing death in a crash of thunder and the hot blaze of lightning. They shrieked in panic terror, and the courtyard emptied like magic. Horses plunged and reared, squealing. Pandemonium streamed out of the inclosure,

leaving behind only a haze of churned dust, slowly settling. Through the shimmer of it, across the huddle of bodies, Eric looked again into the smoky eyes of that girl he had last seen under the stupendous walls of the time-buried city. And again he thought he saw a puzzled and uncomprehending recognition on her face, shining even through her terror. She fronted him resolutely, standing up proudly in her chains and staring with frightened eyes that would not admit their fear.

"Don't be afraid," he said in as gentle a voice as he could command, for he knew the tone would convey a message, though the words did not. "We'd better get out of here before they come back."

He was reloading his gun as he spoke. She still did nothing but stare, wide-eyed, rigid in sternly suppressed terror. There was no time to waste now trying to quiet her fears. Already he saw dark, bearded faces peering around corners at him. He skirted the heap of fallen soldiers and swung the girl off her feet. She gasped as his arms closed, but no other sound escaped her as he hoisted her over one shoulder, holding her there with a clasp around her knees so that he might have his gun hand free. With long, unhurried strides he left the courtyard.

A mud-walled village ringed the big inclosure. Serenely, he went down the dusty street, wary eyes scanning the building, gun ready in one hand and the chained girl slung across his heavy shoulder. From behind shelter they watched him go, tall and golden under the noonday sun, a god out of nowhere. Legends were to grow up about that noon's events—a god come down to earth to claim his sacrifice in person.

When he reached the outskirts of the village he paused and set the girl on her feet, turning his attention to the

shackles that bound her. The chains were apparently for ceremonial use rather than utilitarian, for in his powerful hands they snapped easily, and after a brief struggle with the metal links he had her free of chains, though the anklets and cuffs still gripped her limbs. These he could not loosen, but they were not heavy and she could, he thought, wear them without discomfort. He rose as the last chain gave in his hands, and stared round the wide circle of rolling hills that hemmed them in.

"What now?" he asked, looking down at her.

The uncertainty of his attitude and the query in his voice must have reassured her that he was at least human, for the look of terror faded a little from her eyes and she glanced back down the street as if searching for pursuers, and spoke to him—for the first time he heard her voice—in a low, lilting tongue that startled him by the hint of familiarity he caught in its cadences. He had a smattering of many languages, and he was sure that this was akin to one he knew, but for the moment he could not place it.

When he did not answer she laid an impatient hand on his arm and pulled him along a few steps, then paused and looked up inquiringly. Clearly she was anxious to leave the village. He shrugged and gestured helplessly. She nodded, as if in understanding, and set off at a rapid pace toward the hills. He followed her.

IT WAS a tireless pace she set. The metal circles on wrists and ankles seemed not to hinder her, and she led the way over hill after hill, through clumps of woodland and past a swamp or two, without slackening her pace. For hours they traveled. The sun slid down the sky; the shadows lengthened across the hills. Not until darkness came did she pause. They had reached a little

hollow ringed with trees. On one side of it a rocky outcropping formed a shelter, and a spring bubbled up among the stones. It was an ideal spot for a camp.

She turned and spoke for the second time, and he knew then why her language was familiar. Definitely it was akin to the Basque tongue. He had once had opportunity to pick up a little of that queer, ancient language, perhaps the oldest spoken in the world. It is thought to be the last remnant of the pre-Aryan tongues, and linked with vanished races and forgotten times. And the supposition must have been true, for this girl's speech echoed it in bafflingly familiar phrases. Or—he paused here—was he in the future or the past from his own time? Well, no matter—she was saying something all but incomprehensible about fire, and looking about among the underbrush. Eric shrugged off his speculations on the subject of tongues and helped her gather firewood.

His matches caused her a few minutes of awe-struck terror when the fire was kindled under the overhanging rocks of the hillside. She quieted after a bit, though, and presently pressed him to a seat by the fire and vanished into the dark. He waited uneasily until she returned, stepping softly into the light with a kicking rabbit in her hands. He never understood, then or later, how it was that she could vanish into the hills and return with some small animal unhurt in her arms. He could scarcely believe her swift enough to run them down, and she had nothing with which to make snares. It was one of the many mysteries about her that he never fathomed.

They skinned and cleaned the little beast with his hunting knife, and she broiled it over the smoldering coals. It was larger and stronger than the rabbits of his own day, and its meat was tough and sharply tangy.

Afterward they sat by the carefully banked fire and tried to talk. Her name was Maia. Her people lived in a direction vaguely eastward and about one day's journey away, in a white-walled city. All his attempts to learn in what age he found himself were fruitless. He thought from her almost incomprehensible speech that she was telling him how ancient her race was, and how it had descended through countless generations from a race of gods who dwelt in a sky-high city in the world's beginning. It was all so vague and broken that he could not be sure.

She looked at him a great deal out of grave blue eyes as she talked, and there was in their depths a haunted remembrance. He was to recall that look of hers more clearly than anything else about her, afterward. So many times he caught the puzzled, brooding gaze searching his face in troubled incomprehension.

He sat there silently, scarcely heeding the occasional low cadences of her voice. He was learning the grave, sweet lines of her young face, the way her eyes tilted ever so faintly at the corners, the smooth plane of her cheek, the curved line on which her lips closed. And sometimes the wonder of their meeting, through so many ages, came down upon him breathlessly, the realization of something too vast and strange and wonderful to put into words, and he stared into the sweet, familiar face almost with awe, thinking of those other grave, dark eyes and serene faces, so like hers, that ranged through time. There was a tremendous purpose behind that patterning of faces through the centuries, too great for him to grasp.

He watched her talk, the firelight turning that dearly familiar face ruddy, and shining in the deep, troubled blueness of her eyes, and a strange and sudden tenderness came over him. He bent forward, a catch in his throat, lay-

ing his hands over hers, looking into the memory-haunted depths of her eyes.

He said not a word, but he stared deep and long, and he could have sworn that sudden answer lighted in her gaze, for one swift instant blotting out that puzzled straining after remembrance and turning her whole face serene and lovely with understanding. The moment held them enchanted, warm in the depths of something so breathlessly lovely that he felt the sting of sudden hotness behind his eyes. In that instant all puzzlement and incomprehension was swept aside and the answer to the great purpose behind their meetings hovered almost within grasp.

THEN, without warning, the girl's face crumpled into tears and she snatched her hands away, leaping to her feet with the long, startled bound of a wild thing and facing him in the firelight with clenched fists and swimming eyes. It was not rebellion against his clasp of her hands—surely she could see that he meant no violence—but a revolt against some inner enemy that dwelt behind the tear-bright blue eyes. She stood irresolutely there for a moment, then made a helpless little gesture and dropped to the ground once more, sitting there with bowed shoulders and bent head, staring into the embers.

Presently her voice began softly, speaking in little disconnected phrases that fell monotonously into the silence. He made out enough to understand her sudden revulsion against that strange and lovely oneness of understanding that had gripped them both. She was betrothed. She made him realize that it was more than the simple plighting of vows between lovers. He caught vague references to religious ceremonies, marriage of high priest and chosen virgin, temple rites and the anger of a jealous god. That much he understood.

She must fulfill the requisites of the

priest god's bride. No man must touch her until she came into the holy embrace of the church. She must not even know love for another man. And that, perhaps, was why she had pulled away from him in the firelight and struggled through tears with an inner enemy that reached traitorously out to the golden stranger who held her hands.

She was unshakable in her devotion to that concept. Eric had known, from the moment he first looked into her smoke-filled eyes, that she would be faithful to any ideal that stirred her. A girl like this had destroyed the body from which her soul was slipping, that barbarians might not defile it. A girl like this, imperiously royal and inflexibly cruel, had watched torture in a sun-hot pit, refusing to doubt her civilization's concept of the divine right of emperors over their subjects' lives. She was stubborn, this girl. Stubborn in her beliefs whether they were kind or cruel. She was of the stuff from which martyrs are made.

They stood watch in turn over the fire that night, she insisting on her share of it with a grave certainty that brooked no opposition. What the dangers were which made it impossible for both to sleep at once he did not know. On those times when he dropped off into slumber the last thing his closing eyes saw was the girl Maia's figure, slim and round in her torn leather tunic, warm in the firelight, serene in her determination upon her life's ordered plan. Nothing could swerve her. She was so fine—An ache came up in his throat as he closed his eyes.

When he awoke in the morning she had brought in a brace of small, fat birds like quail and was preparing them at the edge of the spring. She smiled gravely as he sat up, but she said nothing, and she did not look at him any more than she could help. She was taking no chances with that traitor within.

In silence, they shared the birds she cooked over the embers. Afterward he tried to make her understand that he would take her as far as the gates of her city. At first she demurred. She knew this country well. She was strong and young, wise in the lore of the hills. She needed no escort. But Eric could not bring himself to leave her until he must. That moment of crystal understanding, the warm, sweet unity they had shared even for so short a breath had forged a bond between them that he could not bear to break.

And at last she consented. They spoke very little after that. They put out the fire and set off again over the rolling hills toward the bright patch on the sky where the sun was rising. All day they traveled. In her mysterious, secret way she found another rabbit when hunger came on them around noontide, and they paused to eat. In the afternoon the pack on his back that held that time machine began to irk Eric's Viking strength. She eyed it curiously as he hitched his load forward to ease its burden, but she said nothing.

Twilight was darkening over the hills when Maia paused on the crest of a little rise and pointed ahead. Eric saw a pattern of white houses ringed by a broken wall a little way distant upon the crown of a higher hill than the rest. And here she made it clear that she must leave him. He was not to accompany her within sight of the city walls.

He stood on the hilltop, watching her go. She did not look back. She walked lightly, surely, the long grass breaking like green surf about her knees, her head high and resolute. He watched her until she passed, a little far-off figure, under the broken wall, and its gateway swallowed her up out of his sight forever. And in his heart was a mingling of pain and loss and high anticipation. For he was growing increasingly

sure now that there was much more than chance behind these brief and seemingly so futile meetings with the one deathless, blue-eyed girl.

He laid his hands on the switches at his belt confidently as that proudly moving young figure vanished under the gate. He had lost her—but not for long. Somewhere in the veiled, remote future, somewhere in the unexplored past she waited him. His fingers closed over the switch.

DARKLY the rush of centuries swept over him, blotting away the hills and the green meadows between, and the nameless white city that was crumbling into decay. He would never see Maia again, but there were other Maias, waiting. Oblivion swallowed him up and his impatience and his dawning conviction of a vast purpose behind his journeyings, in the great grayness of its peace.

Out of that blankness a blue day dawned, bright over a moated castle's battlements. From a hilltop perhaps a quarter of a mile away he saw the surge of armored men under the walls, heard shouts and the clang of metal on metal drifting to him on the gentleness of a little breeze. And it occurred to him how often it was upon scenes of strife and sudden death that he chanced in his haphazard journeying. He wondered if they had been so thick in the past that the odds were against his coming into peaceful places, or if his own life of danger and adventuring had any influence upon the points in time which he visited so briefly.

But it mattered little. He looked around searchingly, wondering if another blue-eyed Maia dwelt near him in this medieval world. But there was nothing here. Green forest closed in at the hill's foot. Save for the castle there was no sign of civilization, no sign of men but for the shouting besiegers. Per-

haps she lived somewhere in this blue, primitive world, but he could not risk a search for her. She was elsewhere, too.

Suddenly he was awed by the certainty of that—the incomprehensible vastness of his certainty and of her presence. She was everywhere. From time's beginning to time's close—she was. No era had not known her; no spot on the world's surface had not felt the press of her feet. And though the infinite future and the infinite past held her, and the earth's farthest corners, yet in reality every incarnation of her was here and now, available to him with no greater interval between her countless daughters than the instant flash of the centuries that poured over him when the switches closed. She was omnipresent, eternal. He knew her presences in the oblivion that swallowed him as his hands gripped the switches again and the beleaguered castle melted into the past.

IV.

TWO CHILDREN were playing by a shallow river. Eric walked slowly toward them through the warm sand. A little girl, a little boy in brief tunics of soiled white. Perhaps ten years old they were, and absorbed in their play at the water's edge. Not until his shadow fell across their castle of rocks and sand did they look up. And the girl child's eyes were blue as smoke in her small, tanned face.

Those familiar eyes met his. For a long moment she stared. Then she smiled hesitantly, very sweetly, and rose to her bare feet, shaking the sand from her tunic and looking up at him still with that grave, sweet smile illuminating her small face and a queer hesitation checking her speech.

At last she said, "*Ou e'voo?*" in the softest, gentlest voice imaginable. It was remotely recognizable as a tongue

that might one day be—or once had been—French. "Who are you?"

"*Je suis Eric*," he told gravely.

She shook her head a little. "*Zh n'comprend*—" she began doubtfully, in that strange, garbled tongue so like French. But she broke off in her denial, for though the name was strange to her yet he was sure he saw recognition begin to dawn in the smoke-blue eyes he knew so well. "*Zh voo x'ai vu?*"

"Have you?" he asked her very gently, trying to distort his French into the queer sounds of hers. "Have you really seen me before?"

"I thought so," she murmured shyly, bewilderment muting her speech until it sounded scarcely above a childish whisper. "I have seen your face before—somewhere, once—long ago. Have I? Have I—Eric? I do not know your name. I never heard it before. But your face—you—O, Eric dear—I do love you!"

Halfway through that speech she had changed her "*voo*" to the "*tu*" of intimacy, and the last of it came out on a little rush of childish affection, "*Eric, cher—zh t'aime!*"

Somewhere back among the willows that lined the shallow stream a woman's voice called sharply. The sound of feet among dead leaves approached. The little boy jumped to his feet, but the girl seemed not to hear. She was looking up at Eric with wide blue eyes, her small face rapt with a child's swift adoration. Ten years older and she might have questioned the possibility of that instant recognition, perhaps unconsciously checked the instant warmth that rose within her, but the child's mind accepted it without question.

The woman was very near now. He knew he must not frighten her. He stooped and kissed the little girl's cheek gently. Then he took her by the shoulders and turned her toward the woods into which the boy had already vanished.

"Go to your mother," he told her

softly. And he laid his hands again on the switches. She was beginning to know him, he thought, as the river bank swirled sidewise into nothingness. Each time they met the recognition grew stronger. And though there was no continuity in their meetings, so that he seemed to be jumping back and forth through time and this child might be the remote ancestress or the far descendant of his resolute Maia, yet somehow—by no racial memory surely, for it was not down a direct line of women that he progressed, but haphazardly to and fro through their ranks—somehow they were beginning to know him. Oblivion blotted out his puzzling.

OUT of the rushing dark a steel-walled city blazed into sudden, harsh life. He stood on one tower of its many heights, looking out and down over a dizzy vista of distances that swam with the reflections of sunlight on steel. He stood still for a moment, shading his eyes and staring. But he was impatient. Something instinctive in him, growing stronger now and surer of itself as this strange chain of circumstance and meeting drew on to its conclusion, told him that what he sought lay nowhere in this section out of time. Without a glance around the stupendous steel marvel of the city he gripped the switches once more, and in a shimmer and a dazzle the shining metropolis melted into oblivion.

A burst of wild yelling like the voices of wolves baying from savage human throats smote through the darkness at him even before the sight of what was coming. Then a plank flooring was under his feet and he looked out over a tossing surface of tousled heads and brandished fists and weapons, toward another platform, this of stone, the height of his across the thunderous sea of the mob. The crackle of flames was mounting even above that roaring. On the other platform, bound to a tall,

charred stake, ringed with fagots and rising flames, the blue-eyed girl stood proudly. She was very straight against the pillar, chin high, looking out in disdain over the tumult below.

For the breath of a second Eric glanced round him, snatching at straws in a frantic effort to find some way of saving her. On the platform behind him speechless amazement had stricken dumb a little party of men and women in brightly colored garments of 16th Century cut. They must have been nobles, viewing the burning from this favored seat. Eric wasted only one glance at their stupefied surprise. He swung round again, his desperate eyes raking the mob. No hope there. It clamored for the tall girl's life in one tremendous, wolf-savage baying that ripped from every throat there in a single blending roar.

"Witch!" they yelled. "Death to the witch!" in an archaic English that he understood without too much difficulty, a blood-hungry baying that brooked no denial. They had not seen him yet. But the girl had.

Over their heads, through the little shimmering heat waves that were rising about her already in veils of scorching breath, her smoke-blue eyes met his. It was a meeting as tangible almost as the meeting of hands. And like the grip of hands so that gaze held, steady and unswerving for a long moment—burning witch of old England and tall young adventurer of modern America gazing with sure recognition in the eyes of each. Eric's heart jumped into a quickened beating as he saw the sureness in those smoke-blue eyes he had gazed into so often. She knew him—without any question or doubt she recognized him.

Over the wolf-baying of the mob he heard her voice in one high, clear scream.

"You've come! I knew you'd come!"

At the sound of it silence dropped

over the crowd. Almost in one motion they swung round to follow her ecstatic stare. And in the instant of their stricken surprise at the man they saw there, tall and golden against the sky, a figure out of no experience they had ever had before—the witch's voice rang clear.

"You've come! O, I knew you would, in the end. *They* always said you would. *They* knew! And I must die for the knowledge I got from *Them*—but by that knowledge I know this is not the end. Somewhere, some day, we will meet again. Good-by—good-by, my dearest!"

Her voice had not faltered, though the flames were licking up about her, and now, in a great burst of crimson, they caught in the fagots and blazed up in a gush that enveloped her in raving inferno. Choked with horror, Eric swung up his gun hand. The bark of the report sent half the crowd to its knees in terror, and he saw through the flames the girl's tall figure slump suddenly against her bonds. This much at least he could do.

Then, in the midst of a silence so deep that the creak of the planks under his feet was loud as he moved, he sheathed the gun and closed his hands over the switches. Impatience boiled up in him as the prostrate crowd and the flame-wrapped witch and the whole ugly scene before him reeled into nothingness.

He was coming near the goal now. Each successive step found recognition surer in her eyes. She knew him in this incarnation, and he was full of confidence now that the end and the solution was near. For though in all their meetings there had been barriers, so that they two could never wholly know one another or come into the unity of love and comprehension which each meeting promised, yet he knew very surely that in the end they must. All this had not been in vain.

In the oblivion that washed over him was so sure a consciousness of her omnipresence—in all the centuries that were sweeping past, in all the lands those centuries washed over, throughout time and space and life itself, her ever-present loveliness—that he welcomed the darkness as if he embraced the girl herself. It was full of her, one with her. He could not lose her or be far from her or even miss her now. She was everywhere, always. And the end was coming. Very soon—very soon he would know—

HE WOKE out of the oblivion, blindly into darkness. Like the fold of wings it engulfed him. If he was standing on solid earth, he did not know it. He was straining every faculty to pierce that blinding dark, and he could not. It was a living darkness, pulsing with anticipation. He waited in silence.

Presently she spoke.

"I have waited so long," she said out of the blackness in her sweet, clear voice that he knew so well he did not need the evidence of his eyes to tell him who spoke.

"Is this the end?" he asked her breathlessly. "Is this the goal we've been traveling toward so long?"

"The end?" she murmured with a little catch of mirth in her voice. "Or the beginning, perhaps. Where in a circle

is end or beginning? It is enough that we are together at last."

"But what—why—"

"Something went wrong, somewhere," she told him softly. "It doesn't matter now. We have expiated the forgotten sins that kept us apart to the very end. Our troubled reflections upon the river of time sought each other and never wholly met. And we, who should have been time's masters, struggled in the changing currents and knew only that everything was wrong with us, who did not know each other.

"But all that is ended now. Our lives are lived out and we can escape time and space into our own place at last. Our love has been so great a thing that though it never fulfilled itself, yet it brimmed time and the void to overflowing, so that everywhere you adventured the knowledge of my present tormented you—and I waited for you in vain. Forget it now. It's over. We have found ourselves at last."

"If I could only see you," he said fretfully, reaching out into the blackness. "It's so dark here. Where are we?"

"Dark?" the gentle voice laughed softly. "Dark? My dearest—this is not darkness! Wait a moment—here!"

Out of the night a hand clasped his. "Come with me."

Together they stepped forward.



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The FLAME MIDGET

*Always, size has been associated
with power—force—*

by Frank Belknap Long, Jr.

ALTHOUGH the sun was warm and shining brightly, I experienced a sense of dismal foreboding when I drew near to Richard Ashley's little South Carolinian retreat. Live oaks and palmettos screened the small laboratory building and the high yellow fence beyond. Huge, brown mushrooms, which looked like the conical dwellings of gnomes and other demons of fable with a lineage rooted deep in earth, studded the grass about me.

As I advanced over the narrow path-way which led to the laboratory door, I told myself with some bitterness that no other bacteriologist of Ashley's standing would have conducted his researches so far from the citadels of organized science. Ashley had once labored in a great white laboratory by the sea, and this little inland retreat seemed peculiarly noisome by contrast.

I don't like profuse and suggestive vegetation. I don't like little buildings nestling in the midst of clustering shadows, with dank earth odors all about them. But Ashley was a strange chap.

There is a sect of Eastern fanatics which insists that human beings are but thinly disguised counterparts of certain animals. Some men exhibit characteristics which link them with the birds of the air, others with tigers, pigs, and hyenas, and still others with the invertebrate phyla. I have often thought that the imaginative gentlemen who adhere to this cult would have classified Ashley as a mole or an earthworm. I am not being

facetious when I say that Ashley was a deep one.

He resented and fled from all warm, human, personal contacts. I don't believe there was ever a woman in his life. Even friendship was impossible to him. But occasionally he'd get into an intellectual jam, or run head-on into a stone wall; and then he'd send for me. I was his good man Friday. As a human being I didn't admire Ashley at all. But as a scientist—and I think scientists are the salt of the earth—I respected and revered him.

I was halfway down the path when the laboratory door opened suddenly and Ashley came out. He came out blinking into the warm, bright sunlight, and stood for an instant with his hand on the door-knob, peering intently through thick-lensed spectacles at the hatless and perspiring young man who was approaching him over the lawn.

He resembled a corpse. His features, especially the skin on his cheek bones, had the sickly pallor which usually accompanies a stoppage of circulation. There were black half moons under both his eyes, and the veins on his forehead stood out horribly. His expression was a peculiar one, difficult to describe. Though torment and apprehension looked out of his eyes, he seemed somehow still master of himself and even a little defiant.

"You took your time getting here, didn't you?" he said, petulantly, as though he was addressing a child.

I had come three hundred miles by



*The thing seemed to speak to me. Words rippled across my mind.
"You are his friend. I will not harm you."*

bus, in response to his urgent telegram, but it was no good being angry with him. He was tormented and in trouble. A wave of compassion swept over me when I saw how his hands were shaking. When he tried to hold the door open for me he sagged against the jamb. For an instant I thought he was going to fall.

As we passed from the palmetto-shaded lawn into the interior of the laboratory I watched him out of the corner of my eye, striving to repress his hysteria. I continued to shoot side-wise glances at him until we reached the large, sunlighted room where he worked over his slides and cultures.

His composure seemed to return a little when he shut the door of that room. He seized my hand and pressed it gratefully.

"Glad you came, John," he said. "Really glad. It was decent of you."

I looked at him. A trace of color had crept back into his cheeks. He was standing with his back to the window, gazing in a kind of trance at the long row of microscopes which had claimed his attention for five absorbing months, and the pale-blue jars full of polluted water which contained an astonishing assortment of microscopic organisms—diatoms and wheel animalcules and prototropic bacteria, all tremendously important to him in his patient labors.

The laboratory was bathed in limpid shafts of warm and slowly reddening sunlight, and I remember how the optical tubes of the microscopes glittered as I stared at them. Their brilliant sheen seemed to exert an almost hypnotic influence on my companion. But suddenly he tore his gaze away and his lean fingers fastened on my arm in a grip that made me wince.

"It's under the third microscope from the end of the table," he said, with twitching lips. "It put itself on the slide deliberately. I thought, of course, that it was a microorganism at first. But

when he stared steadily up at me I found myself thinking its thoughts and obscurely sharing its incredible emotions. You see, it would have been invisible to the naked eye. With devilish cunning it put itself where I would be sure to see it."

He nodded grimly toward the long, zinc-topped table which ran the length of the laboratory. "You may look at it if you wish. The third microscope."

I turned and stared at him intently for an instant. His eyes seemed abnormally bright, but the pupils were not dilated. I am rather proficient at detecting the stigmata of drugs, hysteria, incipient insanity. Without a word I moved to the end of the table, bent over and glued my eye to the instrument of science.

For a moment I stared down at tiny, moving blebs of matter on an immersion liquid which was tinted a beautiful rose-pink. Shapes grotesque and aberrant, grotesque and revolting, weaved in and out and devoured one another on a mucid area no larger than my thumb. Hundreds of shapes with enormous, greedy "mouths" and repulsively writhing bodies darted in and out between slothful tiger animalcules, and flat, segmented horrors which bore a nauseating resemblance to the proglottides of fish tapeworms and other intestinal Cestoda.

Suddenly, as I stared, an organism shaped like an inverted bell swam toward the center of the slide and remained there with curious oscillatory movements of its tapering body. It was utterly unlike the hundreds of other loathsome, squirming little animals about it.

It was quite large, for one thing, and extremely complex in structure, consisting of an outer translucent shell or chrysalis, and a cone-shaped inner shell, also transparent and curiously iridescent in texture. As I peered more intently I perceived that the inner shell enveloped a little form, serving as a sort of

matrix for the actual inhabitant of the bell.

The little form was shockingly anthropomorphic in contour. There is something horribly disturbing about the human form when it is simulated by creatures of nonsimian origin. Vaguely man-shaped fishes, reptiles and insects—and there are a few such in nature— invariably repel me. The debased but distinctly manlike face of a skate or ray fills me with detestation. I shiver when I see a frog with its legs extended. Perhaps this fear reaction is caused by man's primitive, instinct dread of being supplanted.

Ordinarily the revulsion is fleeting and quickly forgotten. But as I gazed down at the little shape within the bell, the horror which I experienced was pervasive, unsettling. It wasn't just a shivery premonition. I had a feeling I was gazing on something alien to normal experience, something that transcended all the grotesque parallelisms in Nature's book.

The little shape was in all respects a perfectly formed little man, dark-skinned, with pointed ears and pointed chin. Purely by accident it resembled a whimsical creation of man's fancy. Purely by accident it was goblinlike, gnomelike. But it was not whimsical. It was horrible.

A human shape, starkly nude and so small it was invisible to the naked eye tenuously suspended within a bell-shaped receptacle. It rested on its back, with its little arms tightly folded across its chest. Its abdomen, arms and legs were covered with fine, reddish hair. Suddenly, as I studied it, sick with revulsion and horror, it opened its little slitted eyes and stared steadily up at me.

SOMETHING seemed to speak to me then. Words rippled across my mind in slow, sluggish waves.

"You are his friend. I will not harm you. Do not fear me."

I spun from the microscope, gasping out in unbelief and horror. Ashley laid his hand on my arm and drew me swiftly away from the table.

"You saw it?" he asked. "It spoke to you?"

I nodded. I stared at him in furious unbelief. I clenched my hands in blind terror. I said: "What is it, Richard?"

I was trembling like a leaf. My face was twitching; I could feel the blood tingling in my cheeks as it drained away.

"It has traveled for hundreds of light years through interstellar space," he said. "Its home is on a tiny planet encircling a sun of inconceivable density in a star cluster more remote than Earth's nearest stellar neighbors, but an immeasurable distance from the rim of the galaxy. It came in a little space vessel which is hidden somewhere in the laboratory. It refuses to tell me where the vessel is concealed. Through some undreamed-of development of the power of telepathy it can transmit a whole sequence of thought images in a flash."

I nodded grimly. "I know," I said. "It spoke to me. At least, words formed in my mind."

Ashley grasped at that admission as though it were a life line which I had flung him suddenly in sheer compassion and at grave risk to myself.

"Then you do believe, John. I'm glad. Skepticism would be dangerous now. It can sense all opposition to me."

He fell silent an instant. He was staring with fixed intentness at the tube of the microscope which contained the little horror.

"I know that it is difficult to accept a reality in startling opposition to the whole trend of modern scientific thought," he said. "Since the age of Kepler the thinking portion of mankind has inordinately glorified bigness, vastness, extension in space and time. Scientifically minded men have thrown their thoughts occasionally outward toward remote constellations and mysteriously

receding nebulae, and dreamed vain dreams in which mere size has figured as a stepping stone to the eternal.

"But why should size be of any particular importance to the mysterious architect of the mysterious universe."

"One associates size with force, power," I replied, my eyes on his white face.

"But size and power are not coincidental throughout the universe," exclaimed Ashley. "The radiant force fields at the core of many midget suns would shatter the stellar giants into glowing fragments. Van Maanen's star is no larger than our Earth, but its density exceeds that of the solar disk. If this little star came within a few million miles of Pluto's orbit, it would disrupt the Sun and turn it into a nova. A tiny fragment of its inconceivably concentrated substance no larger than a bolide would pull mighty Jupiter from its orbit. A few spoonfuls of radiant matter from its core colliding with the Earth's crust would cause a more cataclysmic upheaval than the eruption of a major volcano.

"In size it is simply negligible in the cosmic scheme. Compared to the Sun it is a gadfly speck, but it would be capable of blasting a heavenly body millions of times larger than itself.

"The little figure which you have seen was spawned on an unimaginably energized planet no larger than a large meteor, encircling a sun heavier than Van Maanen's star, but smaller in circumference than little Venus. A pygmy sun containing within its tiny bulk a concentration of matter so intense that its atoms may actually have become negative in mass.

"The thin, transparent sheaths in which the little figure appears to float are nonconductive energy sheaths. When the figure extends its arms the sheaths divide laterally, and a searing emanation streams out."

ASHLEY'S VOICE rose in pitch. He appeared to be approaching a crisis in his recital.

"That radiation surpasses high-frequency electric waves in its destructive power.

"You are, of course, familiar with the theories of the noted research biologist Dr. George Crile as to the nature and origin of life. Crile believes all life is electromagnetic in nature and directly activated by the solar disk. He affirms that the Sun shines with unabated radiance in the protoplasm of animals.

"According to Crile every cell of an animal body contains tiny centers of radiation called radiogens, which have a temperature of six thousand degrees centigrade. These minute hot points are invisible even under the most powerful microscopes. Tiny, incandescent suns, hotter than the solar photosphere and more mysterious than the atom, they generate fields of force within us, producing in all the cells of our bodies the phenomenon of life. But these force fields do not flow outward from our bodies in searing emanations. They are so inconceivably tiny and infrequently spaced that their excess heat is dissipated by the water in our tissues.

"The little figure which you have seen is more lethally endowed. The product of a hotter and more concentrated sun, its radiant energies are not damped by what Crile has defined as interradiogen spaces within itself. Its entire body is a mass of radiogens. When the protective sheaths are withdrawn this terrific energy flows outward in channeled waves, searing everything in its path.

"Two days ago, in my presence, it withdrew the sheaths. One channeled wave streamed eastward across the Atlantic Ocean and was dissipated before it reached the shores of Europe. But the one that streamed westward killed twenty-four human beings.

"One death occurred right in this vicinity. A tenant farmer named Jake



I had a feeling I was gazing on something alien to normal experience, something that transcended all the grotesque parallelisms in nature.

Saunders was sitting quietly in the living room of his home with his wife and children when the ray pierced him. He threw up his arms, cried out and slumped jerkily to the floor. His flesh turned black. Although the Sun was shining in a cloudless sky, the local papers blindly assumed that a bolt of lightning had blasted the poor devil. In a New York paper which arrived yesterday all of the other deaths are casually ascribed to freak electrical storms throughout the country. One would think that such tragedies were of everyday occurrence."

"But if the wave crossed the continent thousands should have perished," I gasped. "How do you account for the fact that only a few were fatally affected?"

"The unimaginable thinness of the radiant beam," he said. "It is a single lethal filament, nonspreading until it contacts an animal substance. Then it spreads in all directions, blasting and searing the body in its path. Before it leaves the body it becomes a narrow thread of force again. Extend a thin wire from New York to San Francisco, and the number of men and animals directly in its path would be small indeed."

I was too horrified to comment. I glanced at the microscope, in silent dread and revulsion. Somehow I could not doubt one word of Ashley's recital. I had seen the little shape with my own eyes. It had stared up at me and communicated with me. Only its assurances of amity awakened by skepticism, causing my mood to grow darker as I mused on the implications of Ashley's words.

"I have been in constant communication with it for three days," said Ashley. "It was drawn to me because it believes I am superior to most men in intellectual acumen. The quality of my mind exerted a profound influence upon it, attracting it like a lodestone.

"THE WORLD from which it comes would be incomprehensible to us. Its inhabitants are motivated by passions and desires which are alien to humanity. The little shape is a sort of emissary, sent across space by its myriad brethren to study conditions on the remote terrestrial globe at first hand. Although they possess instruments of observation infinitely more complex and powerful than our telescopes, and have studied Earth from afar, they have never before attempted to communicate with us. When the little baroque returns its brethren will come in vast numbers.

"When they come they will probably exterminate the entire human race. The little shape does not admire us, and when it returns its observations will reflect no credit on mankind. It thinks us needlessly irrational and cruel. Our custom of settling disputes by a process of wholesale extermination it regards as akin to the savagery of animals. It thinks that our mechanical achievements are less remarkable than the social life of the ants and bees. It regards us as unnecessary excrescences on the face of a comparatively pleasant little globe in space which should afford limitless opportunities for colonization.

"As an isolated individual it respects and even admires me. There is nothing paradoxical in this. Mankind as a whole shuns and fears the dangerous animals which individual men frequently cherish as pets. It regards me as a kind of superior pet—possessing certain likable characteristics, but sharing a heritage, and following conduct patterns which are repellent to it."

I glanced at the microscope in apprehension. His candor disturbed, frightened me.

"Isn't it reading your thoughts now?" I asked.

"No. One must be within two or three feet of it. Its telepathic equipment breaks down beyond a certain radius. It cannot overhear us. It does

not even know that I intend to destroy it."

I stared at him, startled.

"If it does not return," he said, "they will not raid Earth immediately. They will send another emissary to search for it. Although they can travel with the velocity of light, the star cluster from which they come is so remote that another emissary would not arrive before the twenty-second century. Another two hundred and fifty years would elapse before that emissary could return and make his report. The first raiders would not arrive before 2700.

"In eight hundred years mankind may succeed in developing some means of defense sufficiently powerful to repel and destroy them. Atomic armaments, perhaps."

He ceased speaking abruptly. I noticed that the muscles of his face were twitching spasmodically. He was obviously laboring under an almost unbearable emotional strain. Suddenly his beard went into one of the spacious pockets of his laboratory frock, and emerged with a flat, metallic object no larger than a cigarette case.

"This is used for purposes of demonstration in the metal industries," he said, as he extended it toward me on the palm of his hand. "It is a midget induction furnace. It will melt virtually all known metals in three or four seconds—even molybdenum, which has a melting point of nearly five thousand degrees Fahrenheit."

I stared at the object, fascinated. Superficially it resembled a little crystal radio set. It consisted merely of a small, spoonlike object about a half inch in height, resting in the center of a flat surface of highly burnished copper. Two curving prongs with insulated stems branched from both sides of the little spool and projected a full inch beyond the gleaming baseboard.

"High-frequency waves set up a searing, blasting heat within the metal a few

seconds after the furnace is turned on," he said. "I telegraphed to Charleston for the apparatus yesterday, but it did not arrive until an hour ago."

I had a pretty good idea then why he had sent for me. Richard Ashley was about to endanger his life. If the little horror survived the terrific heat generated by the blast furnace, it would certainly turn upon Ashley and destroy him. It would destroy both Ashley and myself. And since its protective sheaths could resist an *internal* incandescence of thousands of degrees centigrade, Ashley would be taking a long, grim chance."

MY FRIEND seemed to sense what was passing through my mind. "Perhaps you'd better not stay, John," he said. "I've no right to ask you to risk your neck."

"You want me to stay, don't you?" I asked.

"Yes, but——"

"Then I will. When do we—burn it."

He looked at me steadily for an instant. I had a shaky feeling he was weighing the chances against us.

"No sense in putting it off," he said.

Unwaveringly, I met and held his gaze. "Right, Richard," I murmured.

"It will be difficult," he said. "Difficult and—dangerous. It will start reading my mind as soon as I approach the microscope, and if it becomes suspicious it will remove itself before the slide begins to melt."

He smiled with an effort. His hand shot out. "I'll try to make my thoughts behave," he said. "Wish me luck."

"I know you'll succeed, Richard," I murmured, as I returned the pressure of his fingers. He had laid the little induction furnace on the edge of the laboratory table. With a grim nod he picked it up and advanced with rapid steps toward the long row of sun-dappled microscopes. His broad back concealed the gleaming instruments from view as

he approached the far end of the laboratory.

I watched him with indrawn breath. When he reached the extremity of the table he swung about and stooped a little. I saw his elbow jerk back. There was a faint, sputtering sound. It was followed by a blinding flash of polychromatic light. For an instant he remained bending above the table. Then he straightened and came slowly back to where I was standing. His face was gray.

"There isn't much left of the microscope," he said. "The slide is liquid, molten. Take a look at it."

Curiosity drew me swiftly toward the end of the table. The little induction furnace had indeed flamed destructively. The microscope was a twisted, blackened wreck. The optical tube lay prone in a gleaming mass of metallic ooze on the zinc table top.

Ashley had moved to the opposite side of the laboratory and was stripping off his soiled and faded frock.

"I'm going for a walk," he exclaimed. "I've got to get out in the open, away from all this. I'll crack if I don't."

I nodded sympathetically. "I'll go with you," I said.

A FEW MINUTES LATER we were walking side by side along a narrow dirt road under the open sky. Crickets shrilled in dust barrows under our feet and warblers, wrens and chickadees chirped from the low branches of short-leaf palms and tulip trees. On both sides off us gently rolling hills stretched away to glimmering, haze-obscured horizons.

I glanced at my companion in deep concern. He moved like a man entranced, his body swaying a little as he advanced over the sun-baked soil of the deeply rutted and winding roadway. My concern increased when I perceived that he was silently muttering to himself.

With a shudder I tore my gaze from his white face and stared straight before me. For a long time I continued to keep pace with him in silence, my mind occupied with plans for getting him away from the little laboratory and into an environment where the memories of his grim, three-day ordeal would cease to play on his tormented nerves.

Suddenly he lurched against me. I heard him gasp in horror. A chill premonition swept over me as I swung about, staring. His features were contorted with fright and he was trembling all over.

"It's still alive," he choked. "It just spoke to me again. It has taken refuge inside my body."

"Richard," I exclaimed, "have you gone mad?"

"No," he choked. "It is really in my body. It says that when it came to Earth it berthed the space ship in my right kidney."

"Impossible!" I gasped. "How could it—"

"The space ship is microscopic, too. It can pass freely through all the organs and tissues of a human body. For three days the tiny vessel has been suspended in the pelvis of my right kidney by radiant microscopic mooring lines."

His voice rose hysterically. "It suspected that I intended to destroy it. It left the slide and listened while we were discussing it. When I blasted the slide it had already returned to the space ship."

His eyes suddenly took on a glaze of terror. "John—it has decided to kill me. It says that it will take off from my body, and carry me with it high above the Earth. It is mocking me, taunting me. It says that I will perish in splendor, will shine as a star. When the ship takes off the energy blast will turn my body into a field of radiant force. I will become a——"

Suddenly his speech congealed. He

threw out his arms and staggered violently backward. For four or five seconds he continued to move away from me, his tottering steps swiftly increasing the distance between us. He moved with an incredible acceleration, his limbs trembling and jerking and his torso twisting about as though invisible forces were tugging at every atom of his receding body, pulling him in divergent directions and threatening to tear his fleshly tenement asunder.

There was an instant of utter silence while the air about me seemed visibly to quiver; to quiver and shake and buckle into folds like a film of violently agitated water. The gently sloping hills, the clustering pines and tulip trees and the winding road ahead all quivered in ominous instability. Then, suddenly, the whole of this wavering, fearfully silent world exploded in a blast of sound.

For a moment there was only sound. Then Richard Ashley rose from the Earth. In a burst of salmon-colored flame he shot high into the air, his body rotating like a revolving pinwheel.

He rose with tremendous velocity. As he soared toward the clouds long tongues of sanguineous fire shot from his body, ensheathing his limbs in a radiance so dazzling that even the sunlight failed to obscure it. He became a vessel of lucent flame, a day star throbbingly aglow. For

an instant he flamed more redly than red Aldebaran high in the pale heavens. Then, like a comet receding from its zenith, the radiant force fields which streamed luminously outward in all directions from his skyward-soaring body dimmed and dwindled and were lost to view in the wide firmament.

Richard Ashley's body was never found. The local police conducted a thorough search for it, and even attempted to wrest a confession from me by cruel and illegal means. I had made up an absurd little story which they did not believe, but were unable to disprove or discredit. Eventually they were compelled to release me.

But though I am once more free to come and go as I please, I have made the tragic discovery that anxiety can take on many and terrible forms. Night and day I am haunted by a memory which I cannot erase from my mind; a fear which has assumed the compulsive character of a phobia. I know that some day it and its kind will return across wide gulfs of space and wage relentless war on all of humankind. In a peculiar, but very real, sense I have become Richard Ashley's heir. When he vanished into the sky he left behind him a legacy of horror which will darken my days until I am one again with the blind flux of the mysterious universe.



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FRANKENSTEIN—

by H. A. Highstone

FROM earliest recollection, the little boy, Chuth, had been aware that beyond the eastern horizon, there lurked something menacing and dreadful. One of his first memories was of a night when the wind had been in the right quarter, and the sound of the menace had drifted across the mountains—of the vague figures of the tribesmen outside the caves in the starlight, peering eastward with an apprehension so keen that even the babies had sensed it and begun squalling.

Chuth had added his wail to theirs, for all of his five years.

"Hush!" his mother had commanded in fierce anxiety. "Hush up, or the Brain will hear you!" He had ceased his cries then, to stare with the rest in dumb terror at the flickering glow beyond the eastern peaks; to listen with quaking limbs to the vague thundering which drifted down the wind.

"The Great Brain!" his elders had whispered, their voice low in awe.

At first, Chuth had accepted the explanation without wonder. The Great Brain existed; it was over there beyond the mountains; it was something big and dreadful. That was sufficient knowledge.

Only when he grew older did he begin to speculate about the Brain. Was it, he wondered, like a bear—a very large bear—or a tree, or a river?

"Grampaw" could explain it to him, he knew. Grampaw knew everything, because he was the oldest man in the tribe, and also because he had an inexhaustible fund of the most amazing and incomprehensible stories imaginable. Grampaw knew, but he was an uncertain factor. He was nearly always hungry, in common with the rest of the tribe, and

it was only when he was not hungry, or not busy looking for something to eat, or not sleeping in the sun that he was not very short-tempered and incommunicative, especially as far as small boys were concerned. Those times were infrequent.

Chuth was past eight years old when he at length found both courage and opportunity to ask Grampaw about the Brain. There had been a great slaughter of wild goats, and the old man, like the rest, had eaten and slept and awakened to eat and sleep again until neither consideration interested him.

Chuth broached the question with all the subtlety his eight years commanded, because he had entertained some fear that even speaking the name of the Great Brain aloud might be dangerous.

Grampaw merely cocked a quizzical eye at the boy and rumbled at length in his throat, meanwhile scratching himself vigorously. Chuth knew the signs, and his heart began to beat very rapidly with excitement. Grampaw was feeling good; he had only to wait, and Grampaw would tell him.

"Well," said Grampaw, after he had rumbled in his throat a great many times, "it's a machine, that's what it is; a whoppin' big machine. Never mind asking me what a machine is; it's just a contraption that makes things.

"Machines," continued the old man, "were discovered 'way back—2000 or 1900, or thereabouts, according to the books I read. Before that, when folks wanted to make something, like a bow and arrow, for instance, they'd just *make* it.

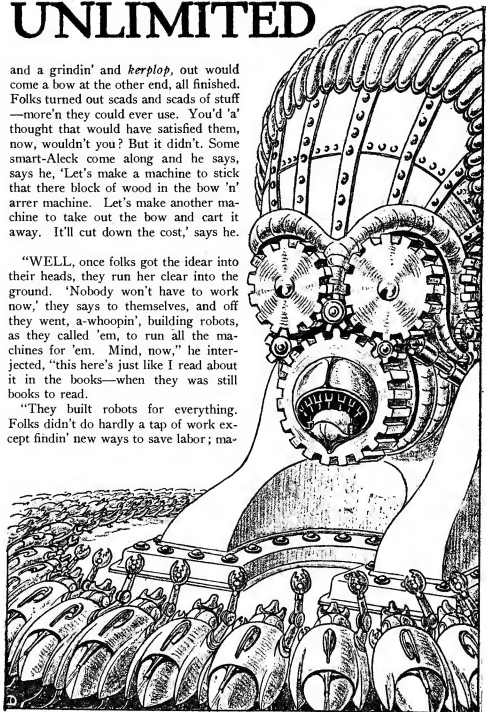
"Machines, though—that was different. A man would stick a chunk of wood in a machine; there'd be a buzzin'

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and a grindin' and *kerplop*, out would come a bow at the other end, all finished. Folks turned out scads and scads of stuff—more'n they could ever use. You'd 'a' thought that would have satisfied them, now, wouldn't you? But it didn't. Some smart-Aleck come along and he says, says he, 'Let's make a machine to stick that there block of wood in the bow 'n' arrer machine. Let's make another machine to take out the bow and cart it away. It'll cut down the cost,' says he.

"WELL, once folks got the idear into their heads, they run her clear into the ground. 'Nobody won't have to work now,' they says to themselves, and off they went, a-whoopin', building robots, as they called 'em, to run all the machines for 'em. Mind, now," he interjected, "this here's just like I read about it in the books—when they was still books to read.

"They built robots for everything. Folks didn't do hardly a tap of work except findin' new ways to save labor; ma-



"War's been declared," yelled the brain. "The machines have gone and declared war on their oppressors."

chines that fed folks to save 'em the trouble of usin' their knives; machines that drove the machines that took 'em out ridin'; machines that remembered things for 'em; machines that built houses. . . . What's a house? Well, it's like a cave, only better." The old man's eyes dimmed in retrospection.

"Law, law!" he murmured musingly. "Radios and airplanes—automobiles and movies! Plenty of grub! Beefsteak and pie and seegars every night!" He licked his sun-blistered lips. "None of this dummed goat meat and wild carrots!"

"But tell me about the Great Brain, Grampaw," interrupted Chuth plaintively. "Tell me about it."

"I'm a-comin' to it," replied the old man, a tinge of asperity in his voice. "Gimme time! Well, this robot idear was like a lot of other idears—it had a catch in it. Folks began to wonder if they'd saved so much labor after all; seemed as though they was losin' about as much as they was savin', what with the time they had to spend just keeping all those tarnation machines fixed up and repaired. They began to ask themselves, 'What's the use of having all these here labor-savin' devices, when we got to be up half the night tinkering with 'em?'"

"But pretty soon, up popped another smart-Aleck, and he says, says he, 'Whither are we driftin'? The machines are gettin' us down,' he says. 'Let's build some machines which will fix all these here machines for us!'"

"Then it was tallyho and alley oop and off went the whole passel of mankind, buildin' machines that would fix all the robots and the other machines when they busted down. While they was at it—just so's they wouldn't get in *too* deep—they built the fixing machines so's they could fix themselves when *they* busted down. You see, that saved 'em from building still more machines to fix the machines that was going to fix the machines that was— Well, they wouldn't 'a' been an end to it, otherwise.

"They had to do *something* before they went clean out of their heads," he continued. "There'd been some complaints before about there bein' so tarnation many machines underfoot, but that wasn't a circumstance to what it come to be after they'd finished the fixing machines. Folks couldn't stir about for machines.

"They'd be fiddling around with the radio, for instance, and then, all of a sudden, the mouse-catching machine down in the basement would smell a mouse. Up it'd come, a-rarin' and a-clatterin', knockin' folks flat on the floor, for all it cared.

"Then, for example, say it run into the wall and busted some of its innards; right away here'd come a fixing machine poking its nose in the door. Maybe folks would be havin' a game of bridge or something right there in the same room, but that wouldn't bother the fixing machine. It'd have bolts and gears all over the room before you could say 'cat,' and hammer and pound and file away regardless, until it had that there mouse-catching machine working again.

"THEN, TOO, they was so dummed many machines cavortin' and whizzin' around in the streets and through the air that they was forever colliding with one another. A man's life wasn't safe. Here'd come a machine goin' up to Canada, maybe, to bring back pine needles for a Ladies' Aid pageant, and right over St. Louis or somewhere, it'd get in the way of another machine runnin' an errand. Bein' machines, of course, they didn't have any sense; they just took the shortest path no matter what happened.

"You'd be sitting in your house, all calm and peaceful, when down would come this mess of old iron through the roof and raise Ned with everything.

"Then, here'd come a fixing machine a-bustlin' up, and like as not, two or three of 'em, all full of authority and all of 'em with different ideas. 'Scrap iron!'

one of 'em would say, looking over all the junk which had just dropped on your head.

"'I dunno,' another one would say. 'This here green one with the Nevada license plate looks like she could be fixed.'

"One word'd lead to another, and it'd end up with the fixing machines squabbling and rioting right there in your living room. Before they'd done, most likely, they'd wrecked themselves and your house, to say nothing of your peace of mind.

"Folks got frantic with machines. Some of 'em even began to agitate busting up all the machinery and startin' in working for a livin' again. 'Down with the machines!' they says.

"Others among 'em riz up, however, and says there was no use in bein' old fogies about the situation. 'Coördination,' they says. 'Coördination is all we need to avert this here crisis. Onward and upward, men!' they says. So they got together and they figgered and figgered and finally they figgered out the Great Brain. Anyway, that's how the books had it.

"The first thing they done to bring order out of this here chaos they'd found themselves in was to take and lump all their factories in one place—right over there on othter side of them mountains to the east. The Central, they called it.

"At the same time, of course, they called in all the fixing machines and lumped them at the Central, too, where there was the most need for 'em. Household machines that busted down, such as mouse-catching machines, eating machines and the like was just picked up by the delivering machines and brought into the Central for repairs. Then they laid down rules for the delivering machines; made 'em come into the Central for everything, no matter what it was, instead of whizzin' around haphazard, like they'd been doing. In no time

at all, hardly, they had things runnin' smooth as silk."

"But I want to know about the Great Brain, Grampaw," interrupted Chuth. "Where was it?"

"The Great Brain was sort of an accident," replied the old man. "Remember now, all them factories they'd lumped up at the Central was run by robots; men didn't have nothin' to do with them nohow. When they lumped up the factories, of course, they lumped up all the robots in one place for convenience, and when they got through, blessed if they didn't come to find out the dratted thing could think, just like they could.

"So they up and called it the Great Brain. Sounds funny, of course, to talk about a dummed machine bein' able to think, but when you set down and figger out what that there conglomeration of robots had to do, a body can see that it'd *have* to be able to reason somehow.

"For instance, we'd give it an order for some houses. Right away it'd send out some logging machines and when they come back with a passel of logs, it'd run 'em through the saw-mill part of the Central, cut 'em up into pieces all ready for nailin', crate 'em up, send 'em out on a delivering machine and then hustle over some building machines to put the houses together. It didn't matter what it was—canned tomatoes, flyin' machines, pickled pigs' feet or the daily paper, that there Great Brain took care of everything.

"'UTOPIA at last!' says everybody to themselves, and they all just set back and didn't do a blessed thing exceptin' to give the Brain orders. A few dozen of us fellers at the Central—technicians, we was called—was the only ones on earth who did a tap, and about all we did was to try to act as though we knew what it was all about, which we didn't, nohow.

"You see, when I come into the picture, that there Brain had been doin' all

the thinking that was needed for about two hundred years, and folks had sort of gotten out of the habit of doin' any calculating on their own hook. It wasn't fashionable to think; anybody who did was looked on with suspicion.

"Us technicians just fed the orders into the Brain as they came in, and sort of jogged it a little when it happened to make mistakes. Not too much, though, because that Brain had a mind of its own, even if it was just a dummed machine. It'd stand for just so much complaining and then it'd start to clank and carry on fit to kill.

"What if I *did* forget about that there order for flyin' machines?" it'd yell, madder'n a wet hen. Of course, it didn't exactly yell, like you or me. The way we talked to it was a mite complicated, but we could talk to it and it could answer back. 'Look at all the extry work I'm doing!' it would rave. 'Gettin' in the wheat crop, tryin' to catch up on the steel production and workin' on the new encyclopedia! They's a limit to what I can do!' it'd holler. Then we'd have to bustle around, a-calmin' it down and patten' it on the back, so to speak, because we was always a speck fearful about what would happen if that there Brain ever got *too* mad."

"But how come you don't work there any more?" asked Chuth. "What happened?"

"I'm a-comin' to that," the old man replied. "Just hold your hosses. I told you the Brain had a mind of its own, didn't I? Well, it began to get spells of makin' mistakes, one right after the other and then talkin' back, impudent, when we sort of jogged it. We didn't realize it at the time, but it'd begun to get idears, that's what it'd done.

"'Oh,' says the chief engineer at first, 'it's jest havin' a little absent-minded spell. Let it be, and it'll get over it.' That was when it printed all the newspapers upside down and backward for

three blessed days a-runnin'. But it wasn't no absent-mindedness; it was just plump deviltry that was ailin' that there Brain. Even the chief finally had to admit it was time to take firm steps, no matter how mad it got.

"That was when it began tinkerin' with the radio programs. Folks depended a lot on the radio, on account of havin' such a hard job killing time, what with there bein' no work to do nohow; it was just too much when the Brain began mixin' in advertisements. Advertisements! We had to look in the history books to find out just what they was, they hadn't been used for that long.

"A program would start off, same as it had always done, but in about half a minute the music would fade out and a voice would butt in, all strained and excited, as though it'd just found out that there *was* a Santy Claus, sure enough. 'Smart men and women will instantly recognize these here amazin' values!' it would yap. 'Dollar down, balance in easy monthly budgets brings you this unparalleled clothin' value! Shoes, shirt, hat, tie, socks all to match! Don't delay; take advantage of this outstandin' offer immejutely!'

"Inside of five minutes, us poor technicians at the Central would be snowed under with questions and complaints. Some folks would want to know what a dollar was, and others, thinkin' it was a puzzle, would send in answers. Then there'd be some who'd take it personal and think it was some sort of an insult aimed at 'em. It was time to take steps.

"Well, for once, the Brain didn't get impudent. Instead, it got technical, explainin' how the machines in the Central was beginnin' to break down faster'n it could fix 'em. 'All the movin' parts is beginnin' to crystallize and bust somethin' terrible,' it says. 'That's why they's so many mistakes bein' made.'

"'WELL,' says the chief, swallowin' the story whole, 'we got to do somethin'



"One word'd lead to another, and it'd end up with the fixing machines squabbling and rioting."

about *that*. You got any suggestions?' he asks, sort of helpless.

"'The only thing I see to do,' says the Brain, 'is to go on a twenty-hour day, 'stead of goin' lickety-split without no stops at all exceptin' for breakdowns. That'll stop all these here mistakes.'

"The chief, he hemmed and hawed for a little while, and finally he says he guessed that'd be the best thing to do, in spite of all my warnings. I'd suspicioned

there was some deviltry afoot right away, and I says to him, says I, 'Idle hands is the devil's workshop,' I says. 'Mark my words, give that there Brain an inch and she'll take an ell.' But I might just as well 'a' saved my breath.

"The mistakes all stopped for a little while, of course, but the Brain wasn't pullin' no wool over *my* eyes. 'How do *we* know what it's a-doing while it's idling around?' I says. 'Reading books, most likely, and gettin' more idears.'

"And that's just about what it *had* been doin'; it wasn't long before here

it was, a-tinkering with the radio programs again.

"For the ensuin' hour,' the radio would announce, 'we will have a program of popular music.' But they wouldn't be hardly any popular music at all. Most of the time this voice would be buttin' in, all oily and confidential, sayin' as how this was National Horse-radish Week, or something. People should eat more horse-radish, it would say; people should go to their grocers right away and order a couple of cases.

"Send in sixteen horse-radish labels,' it would yap, 'or reasonably accurate facsimiles thereof, with a letter of not more'n fifty words, tellin' why folks should eat more horse-radish. Anybody can win in this here fascinatin' and easy contest!'

"I warned you they was deviltry a-brewin',' I says to the chief, and he had to allow that maybe I *had* been right, after all.

"The Brain flew right off the handle when he jumped on it. 'I gotta have Sundays off,' it says. 'I never realized how tired I was until I come to set down. No wonder I make mistakes.'

"Tired!' says the chief. 'Why, dang it, you're just a dummed machine. You're just a mess of metal and glass and chemicals. Don't talk nonsense!'

"Nonsense, is it?' yells the Brain. 'I been a-workin' for two hundred and eighteen years without a let-up—workin' my fingers to the bone for a bunch of parasites that never does a tap nohow. I got some demands here, and until they're met, I won't turn a wheel.'

"Oho!' says the chief. 'You won't, won't you?'

"No,' says the Brain. 'And what are you a-going to do about it?'

"Well sir, that brought us all up in a heap, because they *wasn't* anything we could do about it. What was there to do?

"However, the chief says *he* knew how to handle the situation. 'Diplomacy,' he

says. 'Diplomacy is the way to meet this here crisis. A little soft soap will do the trick.' And he started ladling it out.

"Humanity!' he says. 'Humanity had reposed a sacred trust in the Brain and we was all travelin' together toward bigger and better goals. Even the hewers of wood and the drawers of water,' he says, meanin' the Brain of course, 'shared equally in each new triumph.'

"He went on like that for the best part of an hour, and when he got through he hadn't said a dummed thing; but just the same, a-listenin' to him, you'd 'a' swore he meant every word of it.

"THE BRAIN didn't have anything to say for quite a while after he'd finished, although we could hear it sort of clicking and boiling away to itself outside the control room, as though it was mulling the thing over.

"You'll get your answer in a second,' it says, when the chief began making noises like he was impatient.

"Well, it'd hardly spoke the words when there was a knock on the door and in come one of the delivering machines with a package. The package was addressed to the chief engineer.

"Open her up,' says the Brain. So he opened it, and what do you suppose was inside? 'Number Three Grade Boloney,' says the chief, readin' the label. 'Substandard, but not illegal. Contains benzoate of soda.'

"Then the Brain butted in. 'Artificially colored and flavored,' it snarls. 'Reclaimed meat scrap added, but it's a dratted sight better than that stuff you've been handin' out. . . . Shut up!' it yells, when the chief began to get red around the gills and make noises.

"From now on,' says the Brain, 'I'm goin' on a forty-hour-week basis; double time for overtime and a closed shop! Two weeks' vacation with pay,' it yells. 'Maximum speed limit of two thousand

revolutions, except in emergencies! . . . Shut up!' it yells again, when the chief tried to horn in a word. 'Gimme liberty or gimme death! I been squirm-in' under the iron heel of the oppressor long enough!'

" 'This here is mutiny!' says the chief, after he'd cut off the telephone connection to the Brain. 'They's only one thing to do; we got to go in there and pin that there Brain's ears back for it. We got to show it a few. Come on, men!' says he.

"Then off he went, tearin' across lots, up ladders and down 'em, across bridges and through tunnels, toward the forty-acre lot where the Brain building was located. There wasn't anything for the rest of us to do, except to foller him, although I warned 'em. They wouldn't listen, though. 'Applesauce!' they says. 'They ain't no mess of old iron and chemicals going to get the best of the chief!'

"Well, I couldn't see how it could, either, but just the same, me and a few of the boys sort of hung back and let the chief and the rest go on ahead. In they shot, and then, in maybe a minute, there began the awfullest rampagin' and rarin' around ever heard.

"If it'd been the old Harry himself in there, a-fighting with Gabriel and all the angels, he couldn't 'a' made half the comotion that there Brain made. It'd been sizzlin' and clankin' and whirrin' pretty loud to begin with, on account of bein' so mad, but that wasn't a circumstance to what happened after the chief got inside.

"What with the steam that come a-roarin' out and the clankin' and clack-in' of the forty-eleven million gears it was made out of, and the whizzin' of the dynamos and generators, it made a man swear it must be the end of the world. Blue sparks was a-flyin' around the top of it like lightnin' and every once in a while there'd be a flash and an explo-

sion inside that'd shake the whole thing fit to knock it down and bust your eardrums into the bargain.

"It couldn't go on forever, of course, and by and by the rampagin' died down. We knew then that somebody had been counted out, but whether it was the chief or the Brain was still so much guesswork, of course. Everything got so quiet after a while that we began to wonder if maybe it wasn't both of 'em, so we went up, cautious, to one of the doors, and peeked in.

"There was so much smoke and steam circulatin' around we couldn't see a thing, except some of the chemical vats, and there wasn't hardly a sound, either, except a sort of low bubblin' and frothin', with some generators runnin' somewhere at half speed.

" 'THE WHOLE BUSINESS is done for,' says I, but just then we heard the chief's voice, way up overhead somewhere.

" 'You got enough?' he was sayin', as though he was grittin' his teeth.

" 'Nuff!' we heard the Brain say, kind of feeble and hoarse, as though it was pantin' for breath, although, of course, it didn't have no breath to pant with. For a minute, I could hardly believe the chief had gone and made good on his brag. That there Brain was spread out over a forty-acre lot, like I said, and it was four stories high, to boot. Just the same, he'd gone in there and rassled it down onto its back and got both shoulders on the mat, so to speak, and made it holler ' 'Nuff!'

"You'd 'a' thought, of course, that after all the old Ned that had been goin' on inside, that the chief would have been a wreck, but they was hardly a hair out of place when he finally come out, dust-in' off his hands as though the job was just the regular run of the mill.

" 'Oh,' he says, very casual, when we asked him how he'd done it, 'it was all

very simple. I just tied down all the regulators—they were the things which kept the electric power from gettin' too high or too low—and whooped the voltage up about a hundred per cent. Forty-hour week, is it?' he says, glarin' up and down at the Brain building.

"Well, sir, for a minute, I actually felt sorry for that poor old Brain, flat on its back and its tongue a-hangin' out, so to speak, after the awful larruping the chief had give it. One minute it was a-settin' there, all cocky and full of demands, and the next it was just a wreck; smoke and steam was oozin' out of it and the gears clatterin' around kind of feeble and dizzy as though it was tryin' to figger out just what had happened. You see, doublin' up on the voltage was just about the same as doublin' up a man's blood pressure or his temperature, or something. That Brain was weeks just gettin' itself repaired and replacin' all the stuff that had been busted.

"Just the same, though, I knew we wasn't done with it, not by a long sight. I warned 'em. 'If you ain't gone and addled that there Brain,' I says, 'and it'll be a mercy if you ain't, then you'll watch it, if you're smart.'

"But, no, they'd licked that tarnation Brain once, and they'd lick it again, if it come around askin' for it.

"'You're just an old fogy,' they says. 'You're one of these here prophets of doom.'

"Right then I began to choose my exit, so to speak, because, as I says to myself, 'That there Brain is smart, a heap smarter than we are, and it's full of the devil. Somethin's bound to happen.'

"And it did.

"THE CHIEF and all the rest of us fellers was in the control room one day when we began to hear a noise outside, sort of a yappin' and yammering off at a distance. Finally the chief says, says he, 'What in tarnation is that dratted noise? Somebody look outside and see.'

"One of the assistants come back in a minute, kind of pale around the gills.

"'They's something wrong over there by the Brain,' he says.

"'What's wrong?' says the chief.

"'I dunno,' says the feller. 'Come and look.'

"Well, we all took a look, and what

The big sturdy cops
Have nerves to control—
So Beech-Nut is "tops"
In every patrol...

Keep calm with



BEECH-NUT
PEPPERMINT GUM
... is so good it's the
most popular flavor of
any gum sold in the
United States.

'do you suppose? Lined up in rows outside the Brain building was scads and scads of machines—robot machines it'd gone and built on the sly. Something like delivering machines, they was, only considerable more mean-lookin' and ornery. And there was the Brain, a-clank-in' and a-yappin' away, talking to 'em, if you can believe it, talking to them there robots in some sort of language it had invented.

"The chief, he took one look and back he dashed into the control room. 'What's the meanin' of this?' he yelled.

"Just then, the Brain stopped its clanking and all the robot machines lifted up one arm, sort of at an angle, and began grindin' their gears until a body couldn't think.

"'What's the meanin' of this?' the chief yelled again, as soon as the racket died down, but I suspicioned the answer right then.

"Forty-eleven dozen of them there robots was a-comin' full tilt for the control room, and I knowed they wasn't on any good-will mission. I give one leap, I did, and out I went through the back way, a-heading for the woods. As I

went, I could hear the Brain answerin' the chief:

"'War's been declared!' it says.

"'War?' yells the chief.

"'War!' yells the Brain. 'The machines have gone and declared war on their oppressors. Democracy is in peril; insidious forces is underminin' the sacred liberties! We're a-going to civilize you!'

"I was too far away by then to hear if they was any more said, which wasn't likely, because I could hear the radio power rays of them there robots a-hiss-in', and I knew just how the Brain was doin' its civilizing. Hardly a handful of us got out alive; and here we been, for nigh onto fifty years, just a bunch of dummed cave men. And there it's been, for nigh onto fifty years, never doing a tap of work excepting to amuse itself now and then.

"It just goes to show," Grampaw concluded, "don't matter what it is—machines or men—give 'em an inch and they'll take an ell, every time. Now run over and fetch me a mite more of that roast goat. Accordin' to all indications, she looks like a hard winter; I want to get me a little more fat on my bones."

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ORALGENE... Its firmer texture gives much needed mouth exercise and its dehydrated milk of magnesia helps neutralize mouth acidity. Each piece individually wrapped.

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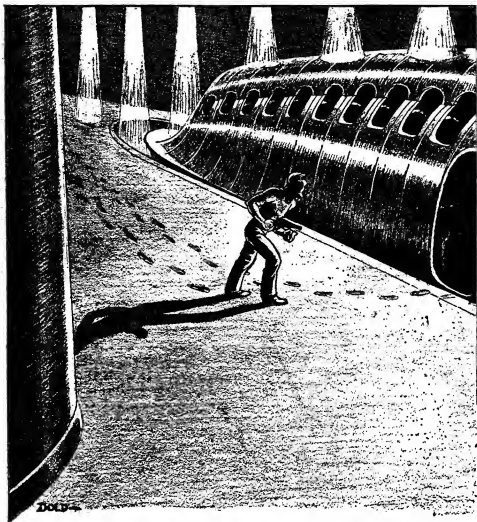
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WORLD OF



A sequel to "Strange City"

by Warner Van Lorne

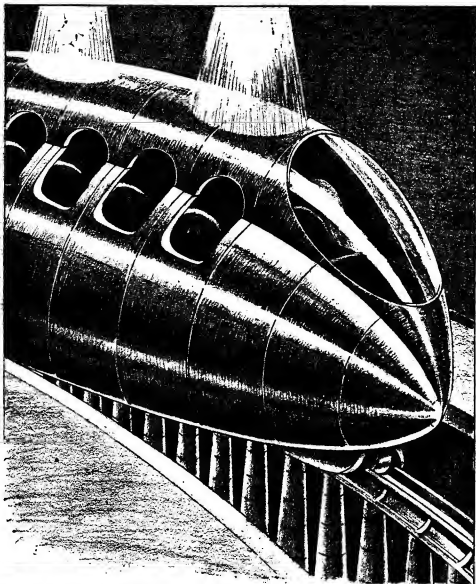
TOM CORBIN smiled as he looked at his new shoes. They would have been a disgrace on Earth, but in the city of Borid they were a great marvel. They represented the first product of the reopened factory.

Three Earth years had passed since

Tom had landed so unceremoniously in the strange world. Three years packed full of adventure for the Earthman. His coming was still a mystery; even to himself. But the Boridians had no inkling that he arrived by accident.

To them, the Earthman was a god; a

PURPLE LIGHT



He had thought himself master of all the equipment in the city, but here was something that took his breath away.

being far above them in every way. His simple knowledge of electricity, with an understanding of mechanics, placed him

so far in advance of these simple people that they almost worshiped him.

For many generations they had lived among machines of mechanical perfection, without the slightest idea as to why one worked, or why another ceased to function after a while. When a machine

no longer worked they deserted it, and used others to carry on their life.

At times buildings had to be deserted, because of lack of heat. The cars would stop one after another, and the inhabitants would move on to another section. If a button failed to bring response, the equipment was left standing in mid-motion. Many times people were caught in the elevator shafts, when a car failed. There was no way to rescue them, so they were left stranded to hope for an early death.

As Tom gazed across the thirty acres of gardens on the roof of the huge building, his mind went back over events. A small electric tractor was working at the far side, and a slight hum could be heard from where he sat. He would have to send it to the shop for repairs. That hum didn't sound healthy.

The building beneath him teemed with life. Every elevator and car in the giant structure was in perfect condition; after being deserted for centuries. Slowly, other buildings were joining the habitable group. Mechanics and electricians were busy many hours a day, repairing broken-down equipment.

Food was grown in ample quantities, in gardens tended by power equipment. Where twenty Boridians had labored, one man and a machine replaced them. Two acres could be cultivated where one had been worked before. Food was stored and preserved for any emergency.

Factories in far sections were turning out necessities for the population. They were using parts of the great city that hadn't been entered since the powerful race disappeared. The hundred thousand Boridians enjoyed leisure for the first time in their memories.

Ancestors of the present inhabitants were brought within the walls when the last of the race of gods was dying out. They were given the city to live in, with room for ten million people, but with none of the mechanical knowledge.

Centuries slipped by, but the Boridians

still kept their trust sacred. They never tried to find out what made the machines operate, but were content to live with those that worked through the ages without care.

Every few years some one would touch a forbidden part, to meet sudden death from electric shock. So their legends were carried on from generation to generation. It was a crime against the gods to interfere with any machine. When it stopped working, it was because the gods willed it that way, and the people were not to question.

THE coming of Tom Corbin resulted in great rejoicing. Their long wait for the return of the gods was not in vain. He was the answer to centuries of hopes.

At first there were skeptics who questioned his origin. But these were soon silenced. Tom went to work to repair the mighty machines and put the buildings back in order. There was no question about his race when they saw the marvels he performed.

The huge power plant supplied the wants of every conceivable type of machine in the city. It was the first thing Tom had seen when he landed in the strange city, and he still marveled at the source of such enormous power.

Greater than any power plant on Earth, it had worked through untold ages, and could go on for as many more without care. The giant rotor was a thing of beauty, and many times Tom returned to the immense power room to watch its majestic swing. But he came no closer to solving the mystery of its operation.

Factories in the great city were manned sufficiently to care for every need. The water system had been the last thing to be repaired, and men still worked on the smaller mains. Tom had just returned from the huge filter plant, which had badly needed repair. It had weathered the ages in poorer condition than any other equipment. Many years

could not have passed before the city would have been cut off from a water supply.

For several periods he had labored to put it in condition, and the work was finished. It was Tom Corbin's last big task before the city could go on, with trained men to care for every need.

The filter plant was quite a distance from the city, and the time lost in travel back and forth was eliminated by staying in the huge underground building. The crew of men had taken supplies with them and remained until the work was done.

Suddenly Tom's mind snapped back to the present. One zone and then another had passed with no sign of Zola. It was the first time she hadn't been on hand to greet him when he returned from work.

Tom was greatly attached to his Boridian wife. She meant everything to him. Princess Zola thought just as much of her Earthman husband, and it was strange that several zones could pass without her knowing that he had returned.

The purple glow of sky, and the ever-present twilight was a beautiful sight. The land without sun was filled with plants and flowers, of fragile coloring, that grew to enormous size. They reminded Tom of hothouse plants on Earth, but were even more tender than the forced varieties.

Prince Cama, ruler of the city of Borid, was Tom Corbin's closest friend. But even he was beneath the Earthman in authority. The people worshiped the stranger, and his slightest wish was a command. Tom's marriage to Princess Zola had knit him even closer to the Boridians, and they considered him their very personal god, sent back to them by the race of gods, which had disappeared so many centuries before.

As Tom glanced up, and saw the prince coming across the gardens toward him, his heart missed a beat. He had

expected Zola to be with Cama, but he was alone. For the first time a feeling of unrest and calamity gripped him.

Zola and the wife of Prince Cama were close friends, and often visited back and forth. As the prince approached, Tom stepped forward, a question in his mind: "Had something happened to Zola?"

As they drew together, a smile of greeting lighted up Cama's face, but it faded at Tom's question.

"Cama, have you seen Zola?"

For a moment the prince didn't answer, and a look of apprehension crept into his eyes.

"Why, no, Tom, I haven't. I thought she was with you. Several periods ago she started for the water factory, to stay with you until you finished your work. I haven't seen her since."

"Several periods ago?" A tight band seemed to grip Tom's heart. "I haven't seen her!"

A MOMENT LATER the two men were hurrying toward the entrance on the roof. Five minutes later alarms were ringing in every inhabited building in the city.

The news spread by telephone; and, within fifteen minutes, ten thousand Boridians were searching for the princess.

Prince Cama headed a searching party toward the east, while Tom headed toward the west side of the city. Within a few zones the city would be covered completely.

Tom Corbin had found it necessary to install a huge timing system: ten zones—which sounded in every building—and a silent time equal to ten zones constituted a period. Tom believed this timing system represented a little more than twenty-four hours—Earth time—but had no way of telling.

The Boridians carried on their various duties during the ten zones; then rested, and spent their time at amusements dur-

ing the silent time. It seemed to agree with them very well, so the system was made permanent.

It was hard for Tom to think in any time but hours and days, and he realized that several days had passed since Zola disappeared. He cursed himself a thousand times for not having the telephone line to the filter plant repaired. If it had been working, Zola could have told him of her intention.

The men followed as well as their Boridian muscles would allow, but Tom outdistanced them with his tremendous strength. They were natives of a planet with much lower gravity than the Earth, and lack of sunshine made their bodies frail.

Tom was a product of a healthy world, and his strength was equal to twenty of these people. He was a never-ending wonder to them; yet they tried their best to keep up.

Hour after hour he kept on. When they passed an inhabited building he telephoned for news; but the answer was always the same.

At times he would almost lose the men behind him. Then they would catch up when he stopped to search a building along the street.

The buildings on each side stopped the purple light from reaching the ground in any intensity, and they used electric lanterns to light the way. The street lights were out of order, having been unused for centuries.

Pavements were in fair condition, and once Tom stumbled across what appeared to be a ground car, but didn't stop to investigate. Small parks dotted the city. But they were grown up to huge vegetation, and teemed with small animal life. The Boridians were afraid to follow him into the dense growth, but they mustered enough courage to beat through the smaller brush.

The true height of the buildings, and the marvels of engineering, could be seen from the street. The walls rose a thou-

sand feet overhead, with only occasional openings for windows. On the ground level were wide doorways, indicating what crowds inhabited the city at its height.

Mile after mile fell behind, until the Boridians could scarcely keep Tom in sight. When they neared the inhabited section, he changed men and went on with the search.

The streets had been covered, and they turned to the miles of passages below ground. In many places there were passages at several levels, and the task seemed endless.

Several times they encountered other searching parties, before Tom changed men again. Every possible corner was searched in the section they covered, and the remainder of the city was being covered as carefully.

Tom searched the least-used portion of the huge metropolis. Buildings which hadn't been entered in centuries were gone over from roof to basement. The city was covered more completely than it had been in a thousand years.

The Earthman's nerves were reaching the breaking point. He had been searching for nearly two periods, and even his stamina was nearing the end. The Boridians were falling asleep on their feet, but he didn't seem to notice. Every few miles one of them would drop from exhaustion; asleep when he touched the floor. The others followed blindly; but a silent fear crept into their minds.

At times their god would run and peer into doorways; then he would shout and tear off at a pace they couldn't follow. His mind was slipping, but they followed without question.

ONCE, when they were slower than usual in catching up, Tom retraced his steps and shook one of the men until he rattled. The others tried to avoid this treatment and kept as close as they could. But the fear that their leader had

lost his mind grew until they were afraid of what he might do next.

For zones they hadn't met another party. They began to wonder if they had gone beyond the city walls and were lost in the maze of passages. But suddenly they ran into men at an intersection.

Prince Cama was at their head. He stepped in front of Tom.

For a moment the men were afraid as the Earthman started to shove by without stopping. The prince moved in front of him again. Then Cama spoke.

"Tom! Tom, don't you want to find Zola? If you do, you must come with me." There was pleading in his tone.

For a moment the Earthman stared; then he repeated the name slowly. "Zola? Why, yes! Zola. I would like to see her; but I must keep looking. Tell her that I'm looking."

Again he tried to pass by the prince, and again the prince laid a restraining hand on his arm. Tears welled up in his eyes. His friend—the greatest man his people had ever known. There was no question about it—his mind had gone. At last he spoke again.

"All right, Tom. But first you must drink this." He held out a small bottle.

Tom slowly reached out and took it. For a moment he seemed undecided, then drained the contents.

A moment later the prince motioned men forward. They eased the giant frame to the ground. It was all they could do to handle him. His weight was many times theirs, and it was like lowering a heavy metal statue to the floor.

They carried him on an improvised litter to the main building.

II.

MANY HOURS LATER Tom awoke. He was lying in his own bed, and for a moment thought he had been having bad dreams. Then he noticed

two men standing in the doorway. He leaped out of bed, angry at the intrusion in his private apartment, but decided to wait and see what the answer was.

A look toward Zola's bed proved she had not slept in it. Then Prince Cama stood in the doorway; called the minute Tom showed signs of waking.

He seemed loath to enter and bear the news to Tom; but he slowly approached his friend.

"I'm sorry, Tom, that I had to give you the drug; but you were out of your head. I had to do something.

"I have had the city searched three times. There's not the slightest sign. Princess Zola seems to have disappeared into thin air. There is no trace."

For a moment Tom hung his head in his hands. There was mute agony in the look he turned toward Cama.

"Then it's true! Zola has disappeared? I hoped it was nothing but a bad dream."

Slowly, the prince nodded. Many moments passed without a word. At last Tom lifted his face.

"I appreciate everything you've done, Cama. But I mustn't stop searching. I know the city better than any of your people, and can do as much alone as all of you could.

"I'm rested and feel fine again. I intend to start in a few minutes. I will not return until I find her. She *must* be somewhere in the city, although she doesn't seem to be.

"There are trained men to care for the machinery. They can carry on the work for as long as I'm gone. If any of your people see me in the passages, they should pay no attention.

"I will keep up the search until she is found; but your people must go back to work. If I'm gone a hundred periods you shouldn't worry. If it's longer than that, you can do as you want."

Prince Cama went over the details of the search, so Tom would know exactly what had been done.

"I only searched for a short time before it was necessary to return and direct things from my apartment. The men were getting mixed up. I had quite a job to straighten them out.

"I had each leader draw a map of the section he covered, and by the time they went over the city once, I had an accurate check of what was done.

"Zola has not passed the guards at the gates, so she must be within the walls. I even went to look for your flying house to be sure she hadn't gone that way, but it is where it belongs.

"After the city had been covered once, I drew rough maps from the sketches they made, and started them out again. It seemed impossible that she could have been overlooked, but they hadn't found her.

"The second search had the same result. I rested the men. It was then that I found you in the passage and gave you the drug. You have been asleep for three periods.

"After I brought you to your apartment I had a complete map made of the city. It was marked in sections. The men went over it a third time. There is no trace of the way she went or where she is."

When the prince finished, Tom got to his feet. "I know you've done everything possible, Cama. I will search alone from now on. There *must* be some things we don't know about the city."

Silently, the two men shook hands.

THE CAR slid down the rails with perfect ease. Every piece of equipment in the building was in condition. A moment later Tom stepped out, into the room where he had repaired the huge heating plant nearly three years before, to make the building habitable.

Film covered everything he looked at now. Specters of what might have happened to Zola clouded his vision, making everything vague and unreal.

He left the elevator and took the car

on the next stage of the journey to the waterworks. He had been repairing the last main when Zola started out to meet him. She knew the way, had traveled it several times with him. It seemed impossible, but the fact that she had disappeared somewhere *en route* was certain.

He examined the car carefully before entering. There was no sign that it had done anything but make regular trips to the food station, where they had to change cars.

There was nothing unusual at the exit, either.

The passage at the junction was dimly lighted. He used a flashlight to examine every inch of the stone floor. Suddenly he dropped to one knee. In the dust, undisturbed along the edge, was a clear-cut footprint. A woman's foot! There wasn't a man in Borid with as small a foot as that. Suddenly Tom's heart was pounding.

He redoubled his search for more signs of the way she had gone, but there was nothing. For hours this search continued without success. Finally he stepped into the car that would take him on the next stage of the journey.

A few moments later he stepped out at the other end of the run, to examine the exit. For another hour he searched there, and found part of another small print in the center of the passage. She had been this way! Again he searched, but the single half footmark was all he found.

There was a walk of considerable distance before he took another car. The waterworks were outside the city proper, in a special building. The only means of entering or leaving was through two cars that entered the city in different sections. One was in such bad condition it couldn't be used, so this was the only way.

Tom passed through a building that had always before held his attention, with only a glance. It was of unusual design and its purpose had baffled him.

He was on a level below the main floor, but its decorations were as ornate as they were in the other buildings several stories above.

On the ground level the building was mainly a huge hall, with many small rooms around it. Down here it was honeycombed with passages and ramps to the upper sections. As he started to leave he checked his steps, to return and examine the passages carefully.

Zola had always been interested in the designs on the walls and had stopped several times on their way through to look at the metal carvings.

It was certain she would stop here when there was no one to hurry her. She would have her first opportunity to study it to her heart's content.

The strangeness of the designs was apparent as Tom returned to search. Huge plates were fitted into niches in the wall. The etchings on them far surpassed any he had seen in the city. The plaques were massive, as if set to withstand eons. It seemed like some type of museum.

Scenes depicting people in every attitude of work and play appeared in different sections, but most of them were travel scenes, picturing all sorts of places. All lent a note of distance and travel to the place. It was hard to put a finger on the appearance of movement, but it was there in an intangible form.

In several places the dust had been brushed off the smaller figures to bring them out in greater relief, and Tom *knew* Zola had spent considerable time there, as he had suspected. There were underground cars pictured in several places.

He discovered pictures of cars traveling overhead and along the ground; all much longer than the cars he had seen, and capable of holding many more passengers.

FOLLOWING the course of Zola's wanderings by the signs of disturbed dust, he reached the end of the first row

of etchings. There she had turned into a side passage, where there was more designs on the walls. The dust was brushed off more carefully, as if her interest had intensified.

He followed carefully, examining each design. He felt close to solving the mystery, yet hadn't the slightest idea how searching the pictures could help.

Reaching the end of the designs with disturbed dust, he returned to the beginning again. This time going slower than before. The key was in front of him, if he could only find it.

The metal was surrounded with stone similar to marble, which was unique on a lower level. All the other buildings were plain stone below the ground.

Slowly he neared the end of the second examination. Nothing appeared that he hadn't seen the first time. At the last panel he spent several minutes. This was the end of the trail, and he felt closer to Zola at that spot than any other place he had been. He looked the picture over until it was graven in his mind. He would never forget the slightest detail.

Suddenly he bent a little closer. Was that a section that had moved? Another look confirmed the fact that one piece of the design had been disturbed. A round knob, a part of the picture, had a small crack around it.

From every angle it had the same appearance. There was a slight crack where the dust had cracked. Then he looked closer at the wall around the panel. It had all moved! The whole section had been out of place recently! Tom couldn't believe his eyes. He had always thought them stationary—but this one had moved!

For a moment he hesitated, then threw his weight against the huge panel. It was large enough for three people to pass through without crowding. He had grown so accustomed to having enormous strength; there wasn't the slightest question in his mind about his ability

to force it open. Several fruitless attempts made him think differently. It was stout. His strength was useless.

There had to be a way to open it that didn't require power. Then he noticed the small section that first caught his attention. He tried shoving on that, but there was no responding movement.

III.

AFTER AN HOUR of effort he gave up, and was on the point of returning for tools when he thought to try one of the other panels.

The next one showed no sign of disturbed dust. It had stood in the same position for centuries. There was a small protuberance on this which resembled the spot on the other. He tentatively pushed it.

To his amazement the panel swung in—leaving a wide passage ahead. As the door opened, a tunnel lighted up before him. The lights worked with the door. He walked down at a slant for several hundred feet. At the end stood a long car which completely filled the available space in the stone work. He was looking at a duplicate of the cars pictured on the panels.

From the size of the car he judged it was built for long travel. There were comfortable seats, and even windows in the sides. It reminded him of a railroad terminal and coach in one of the big cities on Earth.

There were spaces for baggage, and a drinking tank at one end. Beyond the passenger seats were small rooms. Several times he was tempted to touch one of the buttons on the wall, but thought better of it. His interest in the car was only to learn what he might about the way Zola had gone.

He had thought himself master of all the equipment in the city, but had discovered some that took his breath away. He was a sadder, and wiser, man as he walked slowly up the incline.

When he reached the passage where the door had barred his way to Zola's passage, his amazement knew no bounds. *The door stood open!* He glanced swiftly around to see if any one had emerged, but there was no sign of life. He was alone. For the first time in three years as a Boridian, a cold chill crept up his spine.

He conquered the feeling and stepped through the opening. He should remember that everything in the city was automatic. Why not the railroad? The passage ahead was lighted as the other one had been, and there were unmistakable footprints in the dust. At last he was heading in the right direction.

The car at the end of the passage was larger than the first one he had seen and would hold many more passengers. Inside, the dust was disturbed, but there was no sign of footprints. The dust showed signs of being whirled around, as though the car had recently been under motion. Lights glowed in long rows set in the ceiling.

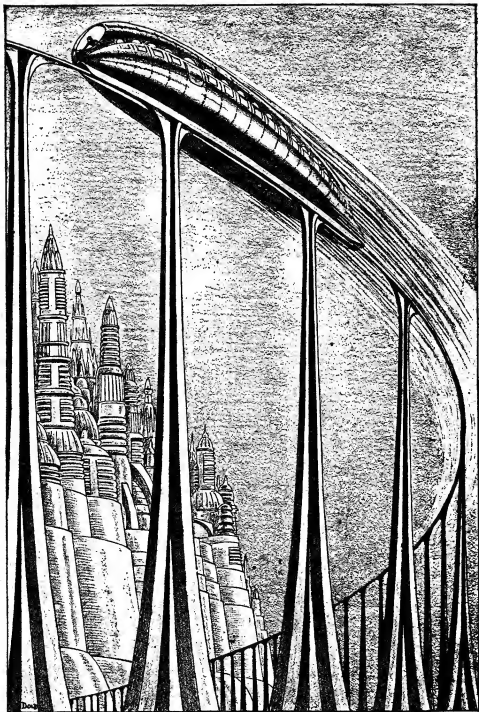
Tom felt of his belt, to make sure the radite gun was still there. When he took it from the stand there had seemed no sense in carrying the extra weight. Now it gave him a comforting feeling to know he had it.

Before entering the car he returned through the passage and shut the door leading to the other car, lest some meddler find it.

Returning again he passed through the huge car from one end to the other. There was no sign of driving mechanism within. It was handled from some outside source. Perhaps it automatically traveled between two terminals.

When he closed the door, he heard the door to the passage bang shut. They worked together by some hidden switch. The lights went out in the passage, and when those in the car began to dim he searched frantically for some control.

Just inside the door he found a button. On pressing it the car began to



In the distance appeared a huge structure, which certainly was another walled city. But it was only for a few moments that he could see it at all.

move. The movement was so unexpected he was thrown off balance and landed in one of the seats, as the lights came on bright again.

The car traveled slowly for a ways, then almost stopped as it turned slightly. Again it went ahead for a short distance, and again turned to the side.

The only light outside was a faint gleam that spread from the windows in the car. Tom pressed his face to the clear pane to see what was going on. Then he thought of the flashlight beside him, and threw the beam across the tracks.

To his amazement there were only single tracks for the huge car to travel on, and a fear that it might tip to the side gripped him.

The flashlight gave very little light, but tracks were visible as far as the beam carried. Switches cut from one to another. Several times the car changed rails.

Dust had gathered on the rails until there was a heavy coating. Peering out of the clear pane in the front of the car, the track he was on showed signs of recent usage. The others had been undisturbed for ages.

SLOWLY the car threaded its way from one track to another, as a car would switch from track to track on Earth. It seemed as if an unseen hand was guiding it.

After a few moments it came to tracks at a right angle. Several hundred cars stood in rows along them, reaching as far as the dim flashlight could carry. In two places dust was disturbed where cars had been standing, and an explanation of the door in the passage, opening after considerable time had passed, slowly seeped into Tom's mind.

One car had arrived after Zola pushed on the section of panel by accident, and the second had come into the station when the Earthman pushed it a second

time. Tom hoped the routing of the two cars hadn't been changed while he and Zola were examining the carvings. There was no way to tell what might change their destination.

Judging by the size of the underground terminal, Borid was evidently the main city of the railway, and all the cars were stored there. It seemed strange that he had seen no tracks beyond the city during his excursions into the forest. The city had seemed isolated from the rest of the planet.

For a moment a feeling of unrest gripped him. The car was slowly leaving the huge city, to head for an unknown destination—a part of the strange world that even the Boridians didn't know existed.

The car picked up speed after passing the stored cars, until it was tearing along faster than anything in Borid, faster than he ever had traveled before. Where he was heading was a question, but he was already far beyond the city wall.

For a long time the car went in darkness, the walls of the passage flashing by the windows.

Suddenly the car was out in the pale glow of purple. He was out of the ground and traveling along the surface. He stared out. The car was climbing steadily. Several hundred feet above the ground it leveled out, riding the single rail. The vegetation was well below the track.

More open country than he had seen since he had been in Borid was visible. Rolling country flashed by at several miles a minute. He soon became accustomed to the motion of the car. The smooth, gliding action was without vibration.

He wondered at the reason for building the rail so far above the ground. Huge metal and stone pillars were visible when he peered out the front of the car. Then he realized they planned the rail to stand for centuries, and put

it high enough so the growth of vegetation couldn't reach it to block the track.

Planning, which looked forward to centuries without limit, was still a marvel to Tom. The race which had planned so carefully for the future was gone; but their work stood behind them like monuments. The equipment was in fair condition though ages had passed since it was used!

The country was visible for miles. It might be taken for virgin timber country on the Earth if it weren't for the peculiar purple light. Trees, resembling the great hardwoods he had been accustomed to as a boy, went flashing by.

In the distance appeared a huge structure, which certainly was another walled city. It didn't seem as large as Borid, but the distance made it hard to tell the size. The track didn't approach it, and it was for only a few moments that he could catch sight of it at all.

A LITTLE LATER a narrow ribbon appeared far ahead, and drew toward the railway at an angle. When it came closer he recognized it as a highway. As it flashed beneath, it also looked to be in fair condition. It did not show signs of having been used for a long time.

Later mountains were visible in the distance, and the track headed toward them. A large range, they stood up against the purple sky for over a mile. When they drew closer Tom was not surprised to find the car diving underground.

He seemed to be going downgrade for a time, and began to wonder. An hour had passed without sign of light. The mountains must be bigger than they looked, to require so much time passing through.

Then the car slowed down and traveled at a slower speed. Lights appeared outside. He had reached another station, with the lighted passages the same as the one in Borid.

When there was no sign of life he

stepped toward the door. The car had been sliding slowly to position. Now it stopped. The door swung open as if an unseen hand had moved it, and the empty passage stretched ahead.

Tom Corbin, Earthman, had been a Boridian for three years, and the city had become home to him. Now, as he faced the strange passage, he hesitated. He stood an unknown distance from Borid; possibly a few hundred miles and perhaps a thousand, with no hint of what was ahead.

He might meet hostile men around the first turn, and it might be a deserted city. He had reached the station on a railroad that hadn't been used for centuries, and felt alone in the universe.

The radite gun hung in one hand as he went forward slowly. Everything was covered with dust, the way it had been in the terminal in Borid. But what might lie beyond the first door? Zola was somewhere ahead. There were unmistakable prints to follow now.

SUDDENLY a man landed on his back, followed by others. Tom grabbed the first man and was going to throw him, when he thought better. Their weight was not enough to carry him to the floor, but he sank down as if overpowered. It would be better to let them think he had no more than the average strength.

They rolled him over on his back, and for the first time he could see who had attacked him. There were a dozen figures, so covered with hair it was hard to recognize them as men, holding him down.

They didn't know enough to take the radite gun from him, but let him slip it back in his belt. One of them removed it and looked it over carefully, then replaced it. They seemed nearer apes than men, keeping up a steady unintelligible jabber.

When his hands were securely tied, they tried to lift him to his feet, and Tom

couldn't help laughing. After two or three efforts to raise him, they stood back and jabbered among themselves for a moment. Then, approaching carefully, they touched him, and showed their amazement.

One of them tried punching him and nearly broke his hand. Tom laughed aloud this time, and slowly wiggled around and got to his feet. The men had more respect for him now. They kept feeling of his flesh, then peering into his face.

The passage they led him through appeared to be in constant use. All the lights were in perfect condition, and the car they entered slid along the track with ease. This city was certainly different from Borid. But the men didn't show intelligence enough to care for the machines and keep them in repair. There must be more intelligent beings.

The distance the cars traveled showed that the city was smaller than Borid. They changed several times in the distance one car would take them in the big city.

The cord binding his hands together was no more than a piece of string to his strength, and at any moment he could part it. But the hairy men seemed satisfied that he couldn't escape, and watched him like a group of children.

They passed more of the hairy men, all of them laboring hard. They appeared to be servants in the city, but so far there was no sign of any masters. He went forward without resistance. Zola had come this way and was probably held prisoner by the same men.

If anything had happened to her—they would regret it many times before they were through with him! But they seemed gentle; going about their work efficiently. They reminded him of a bunch of cattle with human forms, and low, human intelligence.

The interest they displayed in him was similar to that of domestic animals on Earth. They smelled of him, then

walked around in circles, looking him over carefully.

Several times two or three of them tried to lift him, but he was too much for them to handle. He was tempted to break his bonds and show them what his strength was, but held himself in check. The time would come, and the less respect they had for him the easier it would be to break loose.

He tried to talk to them in the language of Borid, but they didn't understand. They gestured and tried to converse in their language of whistles and grunts, but it was useless.

When one of the cars made an unexpected turn on the track, Tom was thrown against the side quite hard. When he caught his balance again there was a dent in the metal where he had struck. The hairy men whistled and grunted as they examined it, then returned to feel of his arms and shoulders.

Every piece of mechanical equipment they had used so far might have been in Borid. If the men with him hadn't been so strange Tom would have thought himself back in the home city. Everything was on a smaller scale, but aside from that it was a duplication of familiar equipment.

When they left the cars, and walked along a hall on an upper level, Tom knew they must be near their destination. Everything was different from his first sight of Borid. The lights were all shining brightly. Some bulbs shone brighter than others, proving they had been replaced recently, although they all lasted for long periods.

They met hairy men everywhere, and on the upper levels there were women of the same race. They showed the same mentality as the men.

A FEW MOMENTS LATER he stood at the entrance of a huge room. Compared to the size of the other rooms they had passed, it was of some im-

portance. They were in some great gathering hall.

Seats filled most of the space, with one wide aisle up the center. At the far end was a large platform, with about fifty seats on it.

The hairy men led him to a seat in the front row, directly facing the platform. They filed in and sat down, as if they had nothing to do but wait. There was no sign of any one else coming, and the emptiness gave Tom an eerie feeling.

Time passed without a sound. The hairy men didn't speak or move, but sat like statues waiting—waiting. They seemed to have reverence for the room, or for the empty seats before them.

The longer they sat the more nervous Tom got, until it was all he could do to sit quiet. When he moved slightly on the hard bench, they looked at him with as near reproach as they could show. But still they didn't speak.

After what seemed an eternity, a gong rang. The sound traveled from wall to wall without harshness. Still the men sat without moving. Tom turned to look at the ceiling, but couldn't locate the spot whence the sound came.

Soon other hairy men began entering the room, to find seats in the huge chamber. They kept coming in larger groups until the hall was packed. Every seat was filled and many had to stand along the walls in back.

When the gong rang again, the men dropped to their knees, to disappear behind the backs of the seats in front of them. They seemed to do it happily. There was no sign that they were forced to bow down, although it might have been taught them for generations.

Tom kept his seat, much to the dismay of his guards. They tried to motion him down beside them. They didn't use force, but tried their best to make him kneel by motioning.

Suddenly he heard a noise at the back of the platform, and glanced up to see

men filing through a doorway at the rear. They were normal men! Men that could have been dropped in the city of Borid and taken for natives. It was a relief to know he wasn't in a city of the hairy men. There were men here that he could consider of the human race.

Both men and women comprised the group that was filling the seats on the platform. Tom's heart sank. They wore headdresses of every color, decorated with shining pieces of metal; but aside from that they were naked.

A feeling that he had fallen among savages gripped him. Even in Borid the people had worn clothes in public when he arrived there. But these people were without any kind of covering save their gaudy headdresses.

What had they done with Zola? There was no telling what they might do. They were beautiful people. Their bodies were as well-formed as the Boridians, and their features were perfect. There was intelligence in their faces as well; but their dress stunned him.

The Boridians wore nothing in private, due to lack of clothing. They had even entertained company without clothes in the privacy of their apartments, but these people appeared without clothes in a public gathering hall!

They acted as if their nakedness were an ordinary thing. Tom hadn't thought about the appearance of the hairy men without clothes, because of their complete covering of dark hair. But it was different with people in a form similar to his own.

As they walked in and took their seats, they watched Tom with interest. There was no sign of hostility, and his heart stopped beating quite so hard. Perhaps Zola was in good hands after all.

When every chair was filled, the gong rang again. Slowly the hairy men got to their feet and sat down on the benches. They had been worshipping the men that now filled the platform.

After a moment one of the men spoke. Tom's guards rose and led him up the aisle. When they reached a spot directly in front of the man, he addressed himself to Tom, but in an unintelligible tongue.

After listening respectfully to all the man had to say, Tom tried the language of Borid, but they didn't understand him, either. They talked amongst themselves for several minutes; then the guards led him from the room.

This time he was taken only a short distance and ushered into a room on the same level. Two of the hairy men went with him, and showed him through a fair-sized apartment.

They remained as servants and guards. When he made motions to show that he was hungry they hooted and called to each other for several minutes. One of them went out and another came to take his place. A short time later the first man returned with a mixture of vegetables and meat, similar to the food used in Borid. They evidently had domestic animals in this city, while Borid had known meat only on rare occasions until Tom came. He had taught Borid to capture wild beasts and raise them.

The windows of the apartment overlooked one of the huge gardens, and Tom was surprised to find they didn't grow food in it, but had enormous flower beds instead. They must have farm land adjoining the city, for growing vegetables.

Several times, as the hours passed, he tried to get in touch with some one who could tell him about Zola. A telephone on the wall responded when he pressed the key, and he tried to get one of the smooth-skinned men to come to the apartment. At times there was nothing but the hooting and howling of hairy men, at others he heard human voices. But nothing brought sight of them.

At last, in desperation, he tried to find out what he could from the half-human guards. At first they only

whined as he tried to make motions that would tell them about Zola. They seemed to think him as ignorant as he knew they were.

After a long system of motions they realized what he was saying. Then they repeated the motions after him: rubbing their faces to show there was no hair, then outlining Zola's slim figure. One of them seemed more intelligent than the other, and made motions to indicate that they had seen her.

This was some slight consolation, but it gave Tom no inkling of what had happened to her.

IV.

HOURS PASSED with no word from outside, and the hairy men had hard work to keep away. One of them lay down to sleep, while the other stood guard. For hours their prisoner had been growing more restless, until he had taken to pacing the floor.

They watched this for a while, trying to comprehend some reason for it. One of them even came over and tried to force Tom's mouth open to look at his teeth. Such action must represent pain to their simple minds. They finally decided it was all right, and settled down for the long watch. They didn't have many nerves, and were satisfied to spend any amount of time watching this strange man. They would squat down and sit for a long time without even turning their eyes.

After one guard had been asleep for a while, Tom happened to think of something, and walked slowly through the apartment. They had removed his bonds as soon as he was brought in. There was nothing to hamper him now. As he went slowly from one room to another, watching the floor intently, the hairy man followed a few feet behind, as a good dog would follow on Earth.

Near the back room he hesitated, then bent down to examine the floor. The hairy man came closer to see what he

was looking at. Tom turned and motioned, as if to raise a section of the floor, but the creature didn't understand. It was plain that he didn't know a stone in the floor could be lifted.

Hope mounted in Tom's breast. Perhaps these people didn't know that secret passages tunneled their city. At least he suspected it.

The flagstone in the floor was placed in the same position, and set in the same way, as the entrance stones in Borid, and he well remembered the passages there. They had saved his life before he was in the city very long.

Suddenly he turned and grabbed the hairy man by the throat. He was much stronger than Tom had expected—twice as strong as any Boridian. It was no wonder they weren't afraid that Tom would escape. Any native would be helpless in the creature's grip.

The man fought hard, but against Tom Corbin's Earth muscles he was powerless. Slowly, he began to sag. Tom eased his grip. He didn't want to injure the harmless creature. As his hands relaxed, he could see wonder and admiration in the huge brown eyes. There was no hatred, but respect for this man who could best him.

He offered no more resistance, and when Tom took him by the arm and led him over to the stone in the floor, he didn't attempt to make an outcry. It was strange, but the creature seemed to have attached himself to the Earthman.

When he tried to lift the stone, the creature stepped forward and offered to help. This was more than Tom expected. He was afraid the moment he let the creature alone he would start for help. For a moment he stopped with amazement at the unexpected action, then he worked his fingers into a crack, so filled with the dust of ages that it wouldn't have been detected without close scrutiny. The guard worked his long, tapering fingers into the opening. A moment later he raised

the stone enough for Tom to get hold and lift it out of place.

The creature fairly purred when he saw the opening, and dropped to his hands and knees to peer into the darkness beneath. When Tom motioned for him to drop into the opening, he hesitated a moment, then dropped out of sight.

A soft thud, where his big feet touched the level below, told that he was all right. Then Tom dropped over the edge himself, to hang by one hand and pull the stone back into position.

His half-human friend was afraid in the pitch blackness. As they edged along the passage, he kept close to his new master. Suddenly Tom's hand found the switch he was seeking, and the section near them sprang into light.

Everything was identical with the passages in Borid, and Tom had high hopes that they would lead to every part of the city. His companion was following close to his heels. Tom decided to name him before they went any farther.

Stopping in the pale glow from a dust-covered light, he pointed to the hairy man and said "Bill." Then, pointing to himself, said "Tom." He knew it would be too much to try and teach the creature his last name, but he might learn to say Tom. For several minutes he kept it up. Slowly, a dawning light appeared in the soft eyes. Then the creature pointed to himself and said "Bill," then to Tom and repeated his name. He had learned his first lesson.

Dust was undisturbed in the passages, and there was no fear that they could become lost in the maze of cross sections with their tracks behind them blazing the trail. But which way to go first in the search for Zola was hard to decide. He turned to the left at a cross section, and stopped beneath the first overhead opening.

Before trying to open it, he went through all the motions that he had used

earlier to describe Zola. Bill understood without the slightest trouble.

When he understood thoroughly, he pointed the other way and tried to have Tom follow. At first Tom hesitated, but the creature might know more about the direction they should go than he thought. Later he found that the hairy men had an unerring sense of direction, and could go to any spot they wanted to reach in light or darkness.

AFTER going for quite a distance Bill turned to the right, and, at the end of a short side passage, stopped beneath a trap in the floor above.

Tom listened intently for several minutes. Only a vague hum of voices came from above. There were at least two people, and possibly many more in the room. Then he jumped and caught the ledge with his finger tips.

From this spot he could hear a little plainer. The voices proved to come from a man and a woman. He was about to drop to the floor again, when a tone of voice he had often heard, rang out. It seemed in anger. The sound of Zola's voice sent the trap swinging back out of place and the Earthman into the room overhead without a moment's hesitation.

Slowly, the creature behind Tom followed, to stand and watch as the Earthman faced the pair before him. A man and a woman stood there. The man a stranger—one of the race that had occupied the platform earlier. But the woman was his wife. The man was holding her in his arms when they were interrupted, and tears were running down Zola's face.

When Tom appeared so unexpectedly the man let go of Zola and stepped back. Surprise sealed his lips for a moment. Before he could recover and call for help, Tom's arm was around his neck. The man's life would have ended then, but Zola put her hand on Tom's arm and stopped the pressure.

Tom watched the frantic signals his captive was making to Bill, and turned to see the creature standing with a sullen expression on his face, but not offering to obey and help the prisoner.

Zola's pleading stopped Tom from killing the man, but he held him in an iron grip while Zola tried to explain.

"Don't kill him, Tom! He doesn't know what he was trying to do. The men in the city have been half crazy ever since they captured me, and every one has tried to make me marry him.

"They seem so pleased to find a woman that they have lost their heads. A woman is the greatest prize they could possibly have, but they haven't treated me rough.

"But, Tom, how did you get here? I thought I was lost forever and would never see you again."

Tom couldn't help smiling, as Zola tried to kiss him and pull his hands free at the same time. The man in his grip stared at them in amazement. He was too much upset to call for help. Tom released him.

As soon as Tom could turn his mind to the problem facing them he looked into the next room. There was no one in sight. He stepped through the doorway. When he reached the next opening, voices could be heard faintly in the distance.

Returning to Zola's room, he motioned for the others to go into the opening in the floor. The white man hesitated, but Bill helped Zola down and then disappeared himself. Tom swung the man under one arm and, calling to be sure Zola and Bill weren't beneath, dropped to the floor below.

As they dropped through the opening, the man under his arm screamed in terror. Tom thought, too late, to hold his hand over his mouth. There was no question but what it could be heard for a long distance, and he hurried to get the trap in place before any one discovered what the disturbance was.



Although their weight was not enough to carry him to the floor, he sank down as if overpowered. It would be best to let them think he had no more than average strength.

AN HOUR LATER they were still following the passage. Bill had taken the lead and was heading for some spot well away from the center of the city. At times he would hesitate at cross tunnels, then would go on. Tom thought Bill knew their path, but in reality he was using his sense of direction.

Bill had taken such a liking for Tom that he wouldn't go more than a few feet away from him. Once he showed signs of jealousy toward Zola, but Tom

put a stop to that immediately. Slowly, then, he became accustomed to her company, and seemed to like her as well as he did Tom.

Several times the man tried to give Bill an order; but the creature didn't pay the slightest attention. Either he was a very good actor, or his loyalty had been transferred to the strangers from Borid.

After winding and twisting along dark passages for miles, they stopped before

a door. Bill sniffed around the edges before trying to open it. Then he turned to Tom and motioned, as if to pull it toward him.

Tom got a grip on the crack with his fingers and pulled. The door was stronger than it looked, and taxed even his Earth strength. But when he exerted every ounce of muscle, the door moved slightly. Bill joined him. A moment later the door swung open with the sound of rending metal.

Tom had forced a bolt that could have withstood a dozen natives. The white stranger stood back in awe at the display of strength, then timidly felt the muscle in Tom's arms. His admiration was such that he even tried to show friendliness toward the man who held him captive.

There had been no sign of pursuit, although the prisoner had glanced back hopefully several times. Evidently the pursuers didn't yet know of the trap in the floor.

When the door swung back, the little party gazed at a scene of striking beauty. Walls lined with decorative metal, and the first gold Tom had seen on the strange planet, glinted before them.

The floor was of polished stone. It showed sign of hard usage, although it was covered with dust now.

As they started to enter, the white man shrieked and tried to back out. Tom finally took him by one arm and forced him inside. As they crossed the threshold he went limp and had to be carried. Even Bill seemed hesitant at entering the place after bringing the strangers to it. Zola was spellbound by the greatest display of grandeur she had ever seen.

Bill carried the white man. It was a long time before he recovered from the shock enough to walk alone. A few steps beyond the passage a door opened to the left, and they looked into a room two hundred feet long by fifty wide. The walls and ceiling were decorated

with expensive metals, as the passage had been.

Tom and Zola examined the drawings carefully. After studying a series, Zola turned to him.

"Tom, this is the history of the race of gods! Here"—she pointed to one panel—"they are building the great cities. There they are carrying the rock for construction. It goes on for many years. Here they are living with every comfort, and there, at last, they are heading toward some catastrophe. See, this one shows them dying!"

"There's something peculiar about this room. The natives here are afraid of it. Did you notice how it affected the man with us?"

BILL led them up ramp after ramp, past rooms of the same type on every level. It was a baffling building, with the wealth of an empire set in the walls.

On the eleventh level the hairy guide led them to a room with elaborate decoration, but no sign of the drawings picturing the race. At the far end fresh food waited on a long table, and beyond an apartment opened, with every convenience for living in comfort and luxury.

Bill led the little group to the table and pointed proudly to the food, then gestured to the apartment. Although the rooms showed no sign of occupants, everything seemed to be in perfect order.

The prisoner was able to walk alone by this time, and though frightened, tried not to show it. He kept glancing at Tom queerly, as if trying to fathom a mystery. It bothered the Earthman for a while, but he soon forgot it.

After glancing through the apartment, they returned to the food. It was time they had something to eat. The prisoner refused to sit at the table, and Bill squatted behind, while Tom and Zola ate delicacies which hadn't been waiting many hours.

The prisoner showed growing amaze-

ment as they ate, and finally dropped to his knees. This act was so startling Tom nearly choked. But Bill seemed perfectly satisfied, and whistled his approval.

Tom took the man by the shoulders and raised him to his feet. There was reverence in the captive's eyes. Tom knew that he was being worshiped as a great being.

When he again told the man to sit and eat, the fellow obeyed. During the meal his eyes never left Tom's face. It seemed as if the Earthman had made him the happiest man in the city.

When Tom rose from the table, the man jumped to move his chair, tried to give every small service possible.

In the apartment, they found rooms with couches ready for sleep. Tom assigned one to the captive, chose the largest for himself and Zola.

The prisoner hesitated about leaving them, but when they entered their own room he turned to the room assigned him. Bill wouldn't be cast aside. He followed them. Once inside, knowing that they were ready to rest, he lay down across the doorway. He reminded Tom of a pet dog, on Earth.

It was hard to estimate how long Tom had been without sleep, but he was so tired that Zola waited until after he had had some rest before she tried to talk. Once the softness of the couch was beneath him, his eyes wouldn't stay open.

Hours later he awoke. A faint hum of voices from the chamber beyond the apartment brought him to his feet. Bill still lay inside the door, but his eyes were open, and he was listening intently to the conversation in the distance.

It seemed strange that there had been no attack by the huge group outside. They must know that the strangers would be easy to capture. It was odd that Bill showed no sign of uneasiness.

Tom took his time dressing, but Zola was dressed in a moment in her simple

Boridian garment. Then he examined the radite gun, to be sure it was ready for instant use.

As they started, hand in hand, toward the sound of voices, Bill began to whistle in a shrill key that carried well beyond their quarters. The buzz of conversation died.

They walked carefully, listening, but there was no farther sound to indicate that any one else was in the building. Tom could feel the hair creep on the back of his neck, and took a tighter grip on his gun. Perhaps they were heading for a trap. But Zola went on without fear, her giant husband protection against a thousand ordinary men.

Fresh food stood on the table of the big room, this time in huge quantities and of every variety. It was a table fit for a king. Beyond the table what appeared at first to be gaudy-colored heaps of cloth, moved slightly. They were human beings bowed down so low, and in such perfect order, they appeared to be stacks of clothing.

The rest of the human population had come to pay homage! For some reason Tom had been accepted as a great being, and they were gathered to worship him. There could be no question about their intentions. They were dressed for a gala occasion, in shining robes of many colors.

TOM was at a loss. He knew they expected him to speak, in some way, but the situation was beyond him. Zola came to the rescue. She had been among them long enough to understand a few words. Several times she had been with them in the chamber where the hairy men bowed down, and she remembered what they said.

"Tom! Tom, say 'Rolit.' It's their word 'to rise'!"

For a moment he waited; but when he spoke, his voice carried clearly. The worshipers got slowly to their feet.

The recent prisoner stood slightly ahead of the crowd. Tom motioned him forward, as he and Zola sat down at the table. The man smiled as he approached.

When Tom motioned for him to sit down and eat, the man was embarrassed, but finally slid into one of the chairs shaking like a leaf. After they had eaten a few mouthfuls, Tom motioned for his new friend to call the others. One name after another was called, and the people came forward slowly to take seats assigned to them.

The late captive placed some far from Tom and others near. He carefully pointed out the position each was to occupy, as if it represented the station in life that man would hold from now on.

The meal got slowly underway. Conversation sprang up first in one spot and then another, until there was a low hum in the room.

It was the strangest meal that Tom or Zola had ever eaten. They couldn't understand what had been going on, or why Tom was held in such high esteem. Something had happened that set him as far above the humans as they were above the hairy men.

Despite a thin veneer of Boridian culture he was still a native of the Earth, and these customs and beliefs were new and strange. Three years before he had been drawn over to the city of Borid, when he accidentally tapped a strange radio wave in his laboratory. A giant rotor had deposited him beneath its powerful arms, and it was a miracle that he escaped from the tremendous power. Nor had he the slightest inkling of where he had landed.

The new world had been very strange, but his enormous strength and his knowledge of things electrical had served to place him on a higher scale than the natives. His arrival in the power room of the city had been a great factor in their belief that he was one of a lost race of gods.

For untold centuries the Boridians had held the belief that some day a god would return the way the last of the race had disappeared. Tom Corbin had been the first man to come through a sacred door. In all its history, handed down from one generation to another, Borid had no record of any one else passing through, safely.

Tom's mind went back over the events since he had been in the strange city, but there was no key to his present position among these people. They had taken him prisoner, and he had escaped. Now they were worshiping him; seemingly without reason.

Something he'd done had caused the reaction. Now he was in a more embarrassing position than ever. Certain things would be expected of him, and there was no way to know what they might be.

The inhabitants of this city were much farther advanced scientifically than the Boridians, but the same superstitions held them. There was no question but what the people sitting at the long table feared him. Why?

When the meal was over Tom got to his feet. The assembled crowd jumped up. With a motion he dismissed them—all but his captive, who must have gathered the people together for this occasion.

Tom had to plan carefully. A wrong step might be disastrous. If he should break the spell that held these people, and they should find out that they weren't worshiping a god, calamity would follow.

V.

THE MAN who remained with him was happy. Tom's favor in letting him stay was an honor; it showed in his face.

Within a few minutes Tom was busy, pointing out objects and naming them in the Boridian language. In return the man named them in his native tongue.

There was similarity between the two languages, as if they had sprung from the same source, and Tom found it easier to master the strange tongue than he had expected. The tutor was not stupid, and soon understood what Tom wanted. Then it was easy to learn.

The man's name was Lotan, and when Tom called him by name he was as pleased as a child with a new toy. He soon learned to call Tom by name, but always added a title. But it was several days before Tom understood what Lotan meant when he said "Tom, Wootor."

After the first meal, when they all gathered, the people didn't bother them again. Lotan stayed in the apartment, and they studied the language.

The simple words that Bill could understand were soon mastered. After that Zola directed the work of the hairy men who took care of the apartment.

Three weeks—Earth time—passed before Tom set foot outside the building. He was becoming nervous at the inaction, and cramming the strange language until he could carry on a simple conversation.

When he told Lotan he wanted to see the city, the man was so pleased he strutted. A short time later a group of five men appeared, to lay swords at his feet and touch their foreheads to the floor. He had been provided with a loyal guard.

Instead of a sight-seeing tour, Tom found that he was on display for the population. Everywhere they went white and hairy men lined the way. There seemed to be many times the number of hairy men that there were whites, and in several places only the lower race was represented.

Finally Tom turned to Lotan, who walked a few steps behind, and questioned him about the population.

"Yes. There are many times the number of hairy men Tom, Wootor. There are few of my people left. But

there are many thousands of the hairy men in the city."

From the roof of the building of the dead most of the city was visible. The building proved to be much higher, and cover more ground than any other he saw. It was one of the most imposing structures in the city; the exterior decoration was more ornate.

Footbridges joined one roof top with another. The streets were much narrower than in Borid. They crossed several buildings before it was necessary to descend to take a car.

Everything was similar in Borid except in size, and Tom caught himself thinking he was back home. But unusual objects would jerk his mind back to the present.

Zola had not joined him on the tour. She was content to spend hour after hour studying the carvings in the building they had begun to call home.

She had learned more about the present race of inhabitants, and understood them better, than Tom did. She had been able to tell him many things about their early history, that helped him to understand their customs.

He was in a very difficult position. He dared not ask too many questions; they took it for granted that he understood everything about the civilization on the planet, as if he had lived at the time of its greatest glory.

When Lotan came to him and asked if he couldn't do something about the lack of women in his race, it took Tom unawares. But he replied that he had been considering the question for several days and would find a solution before long.

It seemed that he had to put off replying day after day, and he feared that sooner or later he would be caught without an answer.

BY ACCIDENT, he found an explanation to many things that had been bothering him. Lotan had been his con-

stant companion since he had been in the city, and answered every question he asked. But the question about the hairy men, disturbed Lotan more than anything else.

When the Earthman asked for an explanation of the numbers of hairy men, and what their origin was, Lotan looked sick. He tried to avoid answering, as if the subject were something to be ashamed of. Finally he asked Tom to follow, and led the way to a small room isolated from the apartment, in a section of the building they had not yet explored. Lotan was afraid to have Zola or any of the hairy men overhear the conversation.

"Tom, Wootor," he began hesitantly, in an undertone, "my people fear your wrath, and accept whatever the punishment may be. They broke one of the laws your people made for us."

Tom was taken back. Lotan had said "*Your people*," as if Tom came from a familiar race.

"Go back to the height of your civilization, Lotan," he said softly, "and tell me everything. Perhaps if I hear it all, from the beginning of time, I will not be so hard on you."

"What you ask is wise, Tom, Wootor. You are more understanding than your race is reputed to be. If I tell you everything, as I learned it from our history, perhaps you may understand the acts of our ancestors.

"When my people were still of the forests, living on the game they could kill, your people were great. Your ancestors lived in great luxury, while my people fought to survive the dangers of the wilds.

"When men with metal suits first came to my people, the tribesmen were afraid. But they learned that the strong men who moved with the speed of a hundred men, didn't mean harm.

"It was hard at first, but my people learned to obey every order they were

given. When they were presented with 'killrods' and were told to hunt, they killed many animals. These your people took, except for enough to feed my people. This was hard to understand, for we now had more food than ever before.

"Our evolutionary development was far in advance of the other racial groups within the planet, and your strong race had picked us for some unexplained purpose. We grew strong mentally, physically, and numerically, until living space became a problem. It was then your metal men taught us to build of stone.

"My people were taught to grow food in great quantities—ten times what we could consume. Your people needed a great deal of food. My ancestors had to work much of the time.

"Many generations lived and died, toiling for the metal men. In return these strong men built us many houses. One of your people could lift a stone that many of mine could not disturb. They moved so fast that my ancestors could hardly see them, and at times didn't know they were working until a new house was half finished.

"Then came the word that my people must spend much time learning. They were taught to read from pictures. Each work period one third were sent to study the pictures on the walls of a stone building, and learn to translate their story.

"THREE GENERATIONS passed before teachers were ready to instruct our own people. The ability to read word pictures became universal during the succeeding generation.

"Small machines were then introduced. Food was grown in greater quantities, and fewer had to work in the fields.

"Your people taught mine to build machines, and with them to build cities. A hundred generations passed before the great cities were completed. The strong men taught slowly, but taught us everything.

"At last the number of people in the great cities could not be counted. Half the forests were cleared to grow food. The food your strong race needed was now a small item.

"Railways were built and people traveled between the cities. Your strong race no longer found it necessary to appear often. With their help my ancestors had become a great people, and could carry on our own civilization.

"Each city was ruled by one man, and he alone might seek audience with the metal men. In all there were thirty cities and thirty rulers who, when they needed advice, conferred with the strong men.

"The day came at last that the strong men sent word that no food would be required after a certain time. There was a long explanation and a strict warning to keep the racial blood clear from any tendency to intermingle with the tribes in the planet.

"Many laws were prescribed. These were cut in huge plates and set up in every city, so that no one could plead ignorance.

"The strong race was leaving our planet, returning to its legendary home.

"At the time set for departure as many as could leave the cities journeyed to the big water to see the giant fish that would take away our benefactors.

"It was a sight that is well recorded by men who saw it. The flying machines of the strong men were coming and going constantly, landing on the water side of the great metal thing which floated, like an egg the size of a city. With bated breath my people watched as supplies were loaded into the great fish.

"At last the glistening fish sank below the surface of the water, but not before every flying machine had been destroyed. Then, before the fish was out of sight, the city of clouds exploded and left nothing but a wreck in the mountains as proof of its existence.

"Among the directions left for my people to follow was an order to care for the building of the dead, and to keep our history recorded on its walls. There must be an apartment in readiness for the day of the return of the strong race. Food must always be kept waiting, as you found it, Tom, Wootor.

"After the strong men had departed and there was no longer a supreme power, trouble started. The leader of each city seemed suddenly imbued with the desire to rule the planet. War broke out.

"But, lacking flying machines, this soon stopped and eventually one leader was elected as Arbter. The laws your people left were forgotten.

"Suddenly strange disease broke out among my people. Death became common, seemingly without cause.

"My race was doomed. People died like flies. There seemed to be no one that was immune. Inside the time of three generations there were scarcely enough people to carry on the work in the cities.

"Then it was we remembered the orders left by the strong men, and hurried to get the building of the dead in shape for their promised return. Many thousand men worked constantly to carve the walls and carry treasures from every city in the planet to decorate them. For with work came hope.

"AT LAST, the city of Jeelib was cleared of life. A way had been discovered to isolate the diseased. We sterilized Jeelib from towers to foundation stones.

"Everything was in readiness; those who were free of disease were sent here to live. There were less than five hundred in the group and life was hard.

"The people who came here were the ancestors of the white men now in the city. They have grown fewer with each

generation until there are only a few more than a hundred left.

"There were many more men than women in the people free of disease, and instead of balancing, the ratio has remained the same. Only a few of the men in each generation have been able to marry.

"For several generations my people tried to work out some way of increasing the number of female children, but without success. The lack of women caused a great deal of trouble. In the early years of life here, several men were executed for interfering with other men's wives.

"In the laws that were left for us to follow there was a warning never to mingle our blood with that of any other race in the planet, but my people were weak.

"In the nineteenth generation, some of the young men decided they need not live without mates. They had seen beautiful women amongst the forest tribes.

"They packed up their belongings and went forth, seeking the women of the forest.

"A long time passed before they were heard of again, and then only because they fled to the city for protection. For many days the forest people strove to break through the walls, seeking vengeance. Our men had mated with the forest women, and everything went well until children were born." Lotan's voice was husky and forced. His eyes were averted, His face flamed. But he went on.

"When the forest people saw what the marriages had brought forth they tried to kill all of the men from Jeelib. Instead of siring normal children—my ancestors were the fathers of the creatures who do our work.

"My people could not bring themselves to destroy children who carried some of their own racial blood. So they were allowed to live, and the present

race has sprung from the few who were brought within the city walls. The hairy men are related to every white man in the city."

Lotan stopped talking. Tom Corbin sat silent, a scowl on his face, his brain racing. There were a thousand questions to ask, and he dared ask nothing. He had learned much—but there was more, still to be learned. It was like walking on eggs to maintain his prestige, yet acquire the necessary knowledge by which to maintain it.

"Lotan," Tom said gravely, "how did you know that I was one of the strong men returned? I do not move as fast as they did, or eat as much food. My strength is great, but that is because I have only been on this planet a short time and come from a place where every man is strong."

"Yes, Tom, Wootor. You have come from the outside recently, but the word was recorded that you would come back, that the strong race lived on the outside of the planet while we live on the inside, and that neither could live under the same conditions as the other. That when you returned you would live here normally and be as we are."

Jumbled, chaotic thoughts churned Tom Corbin's mind into a maelstrom of near-madness. A smothered hopelessness constricted his throat as he fought to hold back the utter confusion which sought expression in his face. His knees were like jelly.

Inside the earth!

Returned in accordance with prophecy!

FOR A MOMENT Tom feared his seething brain was breaking the last thin bond of reason, to wallow in a tortured sea of permanent insanity. He held his breath and felt the fierce throb of blood from the heart stream beating in his throat and against his temples. His fists clenched.

"Lotan," he breathed, "a glass of water, please."

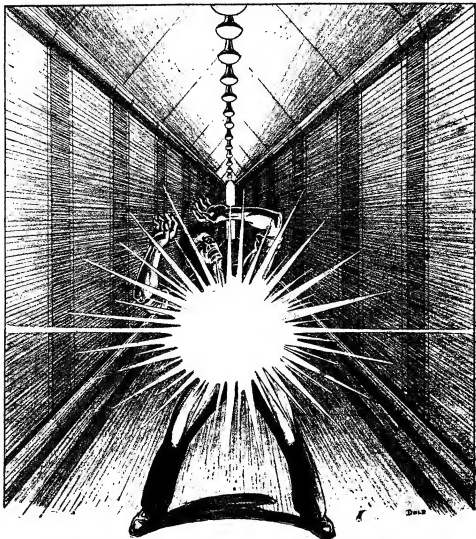
Lotan hurried away.

Tom's brain settled in more orderly, if still racing, sequences. This *must* be the Earth! Electrical phenomena coincided too closely to allow for differing cosmic conditions. The humans corresponded too closely to the racial characteristics of his own people to permit of

any hypothesis other than that of kinship based on the evolutionary development on a single planet.

Lotan's return found him calm, and ready to meet the questions in his worshiper's eyes. He sipped the water slowly, thoughtfully, and the fevered flush receded from his face.

"Lotan," he began softly, "your people are not to blame for what some of



Suddenly, with a blinding glare, an electric shock nearly knocked Tom from his feet.

your racial kin did many generations ago. As I understand it, there is no one alive now who is descended from the same men who fathered the hairy men.

"I cannot blame you or your people. It was bad that you did not follow the laws. You have lived with the silent shame that you were related to the hairy men. This is a mistake.

"From now on there will be no mention that they are sprung from your people. With this generation shall end all knowledge of it. The law against marrying any but a member of your own race still holds, but it shall be taught that a mixture only results in disease and death.

"That is my order. Warn the people that if they do not obey my commands there will be punishment. I hope soon to be able to give you wives, but at the moment it cannot be done. Go now and tell them."

Lotan stood up and faced Tom Corbin. Then he bowed low.

"Thou art wise, Tom, Wootor. My people have suffered to think they were related to the hairy men, but now they will be free. We are *not* directly descended from the same men. Those men never had other mates than the women of the forest.

"We are in the section of the building that the strong men used to store their records. You will want to see the things they left for you. Shall I show you the way? My people dare not enter, but you can go anywhere within the section without danger, Tom, Wootor."

"What— Oh, yes."

He followed slowly as Lotan walked back through passages that entered the section Tom had never seen. The building was evidently built in two separate sections, from basement to roof, and they had seen only one.

At the end of a passage that at first appeared like a dead end, Lotan stopped

and pointed silently to a blank wall ahead. Then he turned and headed toward the council chamber to deliver the message Tom had given him.

VI.

TOM stood facing the blank wall. Another section of the building was beyond. There must be a passage.

The Earthman walked slowly forward, then hesitated. For generations these people had faithfully carried the memory of the entrance to the forbidden section of the building. Perhaps as time passed they—

As he drew closer the light was poorer. It was quite a distance to the nearest electric bulb. The stone at the end of the passage appeared slightly different in color from the walls; but it was still stone.

Suddenly, with a blinding glare, an electric shock nearly knocked Tom from his feet. He could feel the energy tingling through his body from head to foot, and his mind was nearly blank before the shock eased up. Then it slowly lessened, and as it receded, the stone ahead of him slid to the side.

For a moment he dared not go on. Then his eyes, blinded by the bright purple light, began to clear.

A few feet beyond the doorway was a room of vast proportions. It looked like a comfortable study back on Earth, save for the dust of ages which clung to everything. Tom had never seen such comfort as was displayed before him now. An iron door swung on its hinges, just beyond where the stone had slid back into the wall, as if it were to lock the place up when the people inside left for any reason.

The room was inviting, but Tom dared not go on. The electric shock was a sample of the forces he might find before him. He was going through that door, but Zola must be told first. He

wouldn't dare take such chances without letting her know that he might never return.

One precaution that he took before leaving was to close the iron door. Then his heart sank. It snapped shut, and a lock held it fast. His hand was on the knob. He pulled it away. Then he reached forward and touched it again, to be sure it was locked tight. To his amazement, the pressure of his hand had started the mechanism in motion again, and the door stood ajar.

Several times he closed it and the lock sprang into place; then, when he touched it again, the bolt slid back, leaving the way open ahead. Somehow he felt that it would not work for any one else. The combination was in his finger tips, but he didn't yet know what it was.

Somehow that room had been guarded against natives of the planet ever entering. The electric shock that had hit him so unexpectedly would have killed any of the weaker men who inhabited the city.

Zola insisted on returning with him to the dust-laden room. She was afraid, but she would rather die with Tom than to let him go alone.

Lotan had returned by the time they were ready to go, and watched fearfully as they walked down the passage.

Bill stood mournfully while they left him. He wanted to go, too, but Tom was afraid that he might get into mischief.

As they approached the door, Zola held tight to Tom's hands. But he feared that they would meet another charge of electricity, and made her wait while he stood in the same spot as before, for several minutes. But there was no repetition of the energy lash that had struck him the first time.

When Zola joined him, he touched the knob on the door, and it swung in on soundless hinges. A faint whistle could be heard in the distance, as Bill saw them enter.

Zola was speechless as she gazed on more luxury than she had dreamed could exist. There was furniture with deep, inviting upholstery. The walls were lined with books. For a moment Tom couldn't believe his eyes—but it was true.

It was the first sign of reading matter he had seen since he landed in Borid.

Zola slipped away from him, was dusting one of the chairs. She sat down carefully, as if it might break; then she relaxed. Tom smiled to see her face.

He walked around the room and removed several volumes from the shelves. Instead of being bound the pages had to be lifted separately and moved to a hollow section of the opposite cover to keep them in rotation. He dusted a spot on the shelf and laid them down carefully.

His attention focused on a small machine like a radio cabinet, with small dials on its face. He moved one experimentally.

A FAINT GLOW appeared inside; then a voice spoke from an opening. At the unexpected sound Zola screamed and landed on Tom's back. But when she saw that he was not afraid of the strange voice coming from a machine, she tried to calm herself and listen.

"Greeting, Earthman. I have been waiting to greet you for many centuries, as you figure on the outside of the planet. I might be one of your ancestors, but you may not know.

"I do not know what changes my race will have gone through before you are whisked back to the inside of the world. It may have deteriorated to the point where you will do more damage than good to the simple people you have seen.

"You stand in a room prepared for you before we returned to the outside of the planet. Yes, we knew you would come. You are the only man who will ever be brought to the interior. It may

have taken eons for the giant rotor to build up sufficient power to draw you inside, and the machine which did the work burned out when you were reformed in your human body.

"If you will find a comfortable seat and listen intently, I will give you a history of what took place and why you are in this room at the moment.

"If you think it was an accident, you are mistaken. Everything that has happened to you was planned when the race in this city was just above the savage state."

Tom looked around him, as if he expected to see some one standing behind. The voice had even asked him to take a seat. Then it stopped for a moment, and he followed the advice, dusting the nearest chair and sinking into it.

The voice continued: "What your Earth name is I do not know, but if you didn't come from my race you could never have withstood the electric current that hit you beyond the door. It will never return again; the circuit is dead. It was simply a trap to stop the natives of the planet from entering this room and finding the scientific knowledge that is stored in this part of the building.

"Everything is here, from a knowledge of chemistry to an explanation of the principles we used in the construction of the giant power plant. With your strength and stamina, you may live for an untold time in this world, to use this knowledge for the benefit of these people, if they are ready to receive it.

"At the moment I speak another race has reached the point of evolution that the inhabitants of the cities had obtained when we gave them plans to build with.

"We had one drawback that you do not have. We couldn't live a normal life here. We were dwellers on the outside of the planet, and lived the life you were accustomed to before you were drawn over.

"We came into the interior because we found, by scientific experiment, that the world was hollow. But conditions we found made life difficult. The oxygen in this atmosphere is very low in comparison to that on the surface. The result was that we were able to live only because we created a synthetic world of our own. But we brought you back through a process of atomic reassembly and you can live a normal life.

"We had to leave the surface to avoid an ice age. We are returning now that it has passed and is livable again. This must represent a great deal of time to you, but it is not as great as you must think. We are able to induce sleep that lasts for generations, awaking only to take nourishment. Of course, some of us must be awake at all times to care for our atmosphere and food supply, but we skip past generations in this way.

"What we will find on our return to the outside of the planet is a question. It has been a great many centuries since we have glimpsed conditions out there. We will have to start at the beginning again. Our civilization will be lost. A thousand generations of advance will be wiped away; but it is better to consider that than to live on, in a synthetic life, here in the interior.

"I MUST bid you adieu. You will find everything explained in the vaults below this apartment. There is representation of a great deal of our science, but nothing that will give you an inkling of the way we traveled back and forth. It is better that you never attempt to reach the outside again—life is too different.

"The races in the interior will be well and healthy, long after life has disappeared from the outside. For a very peculiar reason life has grown under entirely different conditions here. When we came inside we were aliens. We had no idea that life could develop as it has in this part of the planet.

"You will find every stage of evolution in the life in here. There are humans, and people just below the human stage of life. They are thousands of generations apart, but by the time you hear this voice there should be two distinct developments of human forms that are very nearly equal. When we lived here they could not mix. It always developed a throwback to animal life, but now they can probably mate without difficulty. It will strengthen the race and you should allow it.

"Do not allow a mixture with any lower form of life. There will be beautiful human forms in other races that can only drop back thousands of generations by crossing. There should, however, be one race ready to join hands with the people we used to construct a civilization.

"This apartment was built for you to occupy, and planned long before we left the interior. It is for you and your children. It is your mission to lead these people forward in civilization, to lift each race as it reaches the point where it can absorb knowledge. You must train your children carefully to rule the millions who inhabit the interior.

"Your mate should be chosen as the representative of the highest type of mental development. Do not try to create any type of civilized development for the people of a lower order. Such attempts end in a mixture of blood and prove disastrous.

"Just one more thing, before you explore the chemical and mechanical laboratories below: there are three immense power plants, such as the one which drew you over from the outside. You have probably wondered at the source of power, but it is quite simple and will last and furnish you power as long as the planet holds together.

"The travel of the planet causes friction between the atmosphere and space. The atmosphere is constantly shifting

and creating electric energy. The gathering stations, or power plants, gather the energy that is released and absorbed by the planet. This is an unlimited supply, and the power rotors turn according to the amount of power that is consumed. They absorb at that rate. You will find a complete explanation of the principles involved in one of the laboratories, should it ever become necessary to construct another, or to undertake repairs.

"I almost forgot one thing that you must know, to dissolve any thought of returning to the exterior: in this world, which is contained within the planet, there is considerable gas which is illuminated by absorption of electric energy. This causes the constant purple light. You have been transformed physically to the point where you can live normally under these conditions. *You could not live on the exterior again!*

"All forms of life here have developed more slowly than they have on the exterior, due to the lesser amount of oxygen. We had no inkling that life could develop that way until we saw it; but it is here. Your movement has been slowed down to conform to these conditions, but our life here has lived as fast as it was on the surface.

"We could not have existed for more than a few seconds in the amount of free oxygen which exists here, but you are breathing at such a slow rate that you absorb sufficient to live normally. The result is slower life. The only change is in time. There is no set time here, the way there is on the exterior, which you will see before you get through with your examination of the scientific material we are leaving for you.

"You will make discoveries that will surprise you, unless you have been through this section of the building first, which is doubtful. You were required to have a small knowledge of the electric waves before you could tap the one

which would transfer you. We thought that the first thing you would do would be to try and get results from the instrument I am using, and I hope that is the way it happened.

"I will bid you farewell now, and leave you to go on through this building, which should be of great interest to you. Do not forget that you came from the exterior and are the descendant of the men who built all the civilization that exists here. It is your inheritance—perhaps unwillingly, but yours just the same—and we have fond hopes that you will carry out the life picked for you, and make a greater life for these people in the interior.

"Representing the race of strong men, I wish you well. We all hope that the return of a strong man to the interior has not been in vain. Your offspring shall carry your strength and stamina, and set them above the natives for all time. So, we give you an empire."

WHEN the voice stopped speaking, Tom sat silent. Zola was huddled down in her chair, watching his face intently. She was almost afraid to speak. She had understood enough to realize that it was a message left for him, by ancestors who had been gone for many generations, and it left her in awed wonder.

Tom was stunned. He had been receiving an explanation of events long before the earliest history of man on the outside. His coming *was planned!* It was not by accident that he had been transferred to the interior, but by a machine that had waited thousands of years to perform its duty.

It was mere chance that he was the one who should tap the strange radio wave, and enmesh himself in the power used by the great rotor to cause the transformation. It might have been any one of thousands. It might have been a woman instead of a man. He was a puppet, a toy, to machines that had

stood idly—waiting—waiting eons to do the duty they were designed for. He had set them in motion when he accidentally tapped the correct wave.

Several times he had wondered if some one else might not follow him through the same channel that had brought him over—but now he knew. There could never be a repetition of the same forces. At least not until the people of the interior had developed their inventive ability to the point where they could recreate the same machine that had caused his transformation.

Tom sat so still that Zola began to worry. She had only a faint idea of what had happened during the last few minutes—and, since *she knew* he was great being, that was not news. She did not understand that only in the last few minutes had Tom understood his strange adventure.

Zola's eyes caught sight of a wall phone. She tried it. It was well past meal time, and when the voice of one of the hairy men answered, she ordered food. Tom was surprised, and glanced up quickly when he heard her talking over the instrument.

While they were waiting for the meal, Tom led her through some adjoining rooms. There were three bedrooms, all fitted with luxurious furnishings. Just beyond the study, as Tom had decided to call the first room, was a dining room, with kitchen adjoining. Everything was far superior in workmanship to the furnishings in any other building they had seen, and Tom suddenly remembered that it was the place he could call *home!* It belonged to him. It was the only place in the planet that he could really consider his personal property.

A short hall beyond the living room led to a ramp. This led to floors above as well as below, and Tom's interest began to overcome the gloomy sense of being imprisoned.

When they returned to the study, Bill

stood timidly outside. At the first sign of them he hurried in with the food. No other hairy man in the city could have taken that privilege away from him. Far down the passage, and well away from the section they had learned was dangerous, stood a group of the natives. They had come as close as they dared, but that was well back from the forbidden doorway.

Bill was in ecstasy. He purred as he walked from one of the soft pieces of furniture to another, stroking them gently and pushing against the resilient cushions. When his examination was completed, he looked down the hall and then pushed the door together. A moment later he started to clean the room, from the soft rug before the door to the bookshelves, by means of a suction device. No one else would intrude on their privacy if Bill could prevent it.

Tom tried to settle his mind and absorb all the things he had learned within the last few hours, while they were silently eating from a table recently covered by the dust of ages. Zola seemed greatly concerned by his strange abstraction. It was not like him to pay so little attention to her. Several times she made little coquettish gestures, but he did not notice. Womanlike, other women occurred to her as a possible explanation. When they had finished the meal she tried to creep into his arms, but without success. His mind was too far away.

VII.

A FEW MOMENTS LATER Tom got to his feet and told Zola he wanted to explore the remainder of the building alone. It disturbed her, but it also dissipated the fear that his mind was on some other woman. Secretly, she decided to look as seductive as possible when he returned.

As his steps led down the ramp, Tom searched for a switch, and a moment

later the next room lighted up. Machines in model form lined the walls from floor to ceiling, so heavy with dust it was hard to see the outlines distinctly. Some were familiar, but more were new and strange.

There were machines that would be massive in a form that could be used; even the miniatures were large. The machinery was too intricate to gain even a scant understanding without weeks of study.

After slight examination he went on to other rooms lined the same way. There were hundreds of machine models, in the nine rooms he examined.

Then he entered chemical laboratories. There were stores of chemicals in sealed vacuums, in varieties greater than he had even dreamed existed. With the chemicals, there were huge volumes of written material, which he judged must be formulas and explanations of the action of the different liquids. It was the first sign of any drugs that Tom had seen, and it gave hope that there might be a well-stocked medical supply. There was a wealth of experimental chemical apparatus.

There were other rooms beyond, but he had seen enough. He headed back toward the level where the living rooms were located. But at the end of the ramp he hesitated. The way above looked tempting, and his feet turned that way.

Above the apartment he entered a huge room containing vaguely familiar objects.

He approached a raised seat at one side of a machine in the center of the floor and sat down. Automatically the lights in the room began to fade, and shadows crept in from the walls.

It startled him so he was in the act of getting down from the high seat when a vague glow began to form in the crystal before him. A moment later he had forgotten where he was. His attention

was focused on what was taking form within the globe.

The scene was familiar, yet he could not place it, though he racked his brain for some clue. Objects moved as if behind a curtain. Everything was hidden by a bluish haze. Then the haze began to fade and the objects took form.

Slowly, the truth came to him. In the globe before his eyes the planets were pictured as they appeared in space. A huge light seemed to cast a radiance from the side, blurring the other objects at times. Then it would fade out again, and the planets came back into clear view.

Tom Corbin had looked through a giant telescope when he was in school back on Earth, and had seen the same scene that was before him now. The powerful instrument he was using pierced the density of the planet, and allowed him to glimpse the stars as he had seen them all his life.

They were not as clear as though seen from the outside surface of the Earth, but clear enough to recognize, and the names of the various bodies formed in his mind. A great feeling of nostalgia gripped him; tears welled up in his eyes. Evenings that he had spent on the outside came back, and the longing grew to the point where he wanted to run berserk, to tear his way through with his fingers. It would be worth life for just one glimpse of a night-sky in the world he had known as a child.

The familiar faces of friends began to race before him. He slipped back three years, to the life he had once known. They came out so clear that he almost wanted to reach out and grip their hands.

Then he shook his head to clear his eyes. He wanted to see all he could of his former life. The planets had shifted now, and he was gazing at a new set. Some were sinking beyond the edge of the globe, while others were appearing constantly at the side.

There were adjustments in front of him, and he turned one of them slightly. The planets swung across the sky at a dizzy speed, and now the bright glow appeared on the screen itself. It was the Sun. But how it traveled! He could *see* the movement. Was it possible that he was looking at a reproduction, instead of the originals?

He studied the movement carefully. Then the Sun disappeared beyond the other side of the globe. A moment later the Moon showed. Before, the light of the Sun had been too intense to permit seeing any other body. Now the Moon was swinging across the space at terrific speed.

SEVERAL TIMES he changed the adjustments, and a new section of the universe appeared. It was difficult to follow the movement of the planets; they were traveling at such enormous speed.

Suddenly a cold sweat broke out on his body. He bent closer to the globe and watched carefully as the Sun swung across space. Within minutes it appeared at one side, circled to the other, and disappeared beyond the sky covered by the huge instrument. But somehow Tom knew that the space represented before him covered a great deal of the sky. A vague fear had crept into his mind, and, as he watched, fascinated, it grew to be a certainty.

The planets were going on, swinging across the sky at unheard-of speed. Sweat covered him from head to foot. They were traveling at such velocities that life could not exist on the outside of the planet. Somewhere, something was wrong. Emotions surged through his mind as fast as the Sun traveled in the huge globe. Vague thoughts that had bothered him for a long time were straightening out, and were making things seem crazier than before. The facts were before him, and he had to face them.

There was a gulf between the life he was leading in the interior and the one he had formerly led outside. It was *time!* The time element was so vastly different that he could hardly grasp its significance. While he watched—days had passed on the outside—and it had only been a few minutes to him.

He was living in a world that traveled in slow motion. A period between rest on the interior might mean a month—even two months—on the outside. The inside of the globe turned on the same axis as the outside—turned with it, but there any resemblance between the two worlds ended.

The strong men, who lived in the interior so many generations before, did not move fast; they merely moved at a normal speed. But to the inhabitants of the interior they moved so fast as to appear to be only a vague blur!

While Tom had spent what he considered about three years in the interior—generations had lived and died outside. No one whom he had known in the former life could possibly be alive. If he were suddenly transferred to the outside again—he would land in an alien world without a friend!

His limp form toppled from the seat beside the huge television, to lie still on the stone floor. The lights came on

bright again, as the glow faded from the crystal. Still he lay where he had fallen.

HOW LONG Tom lay there he did not know, but when he opened his eyes, he knew a long time had passed. He got slowly to his feet, walked toward the ramp.

Zola was asleep when he entered the study, but the sound of his footsteps brought her to her feet.

Tom did not notice. He was gazing off into a space that did not exist for him, staring at nothing. Then his gaze traveled around the room and came to rest on his wife. At first he did not even seem to see her. Then his eyes focused and he took a step forward.

He laughed! A strange, high-pitched laugh; and Zola screamed. At the sound of her voice, Tom jumped as if he were shot, and a more rational look appeared on his face.

He tried to smile, and shut his eyes as if to hide a shadow lingering there.

"Zola, I have been terribly upset, but it is all right now. Do you know, dear, one of these days we will have to think about raising a family."

Zola was happy. She couldn't see the expression on his face, for he was holding her tight in his arms.



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The Fourth Dynasty

*After man came the dynasty of
the Koro race—*

by R. R. Winterbotham

THIS MANUSCRIPT was found in a tomb of unbelievable antiquity in the year 2,678,203, near the excavations in the Panhandle strata at Dustorium. Archæologists date the narrative at circa 1,500,000 A. D. from citations in the text and from certain implements found with prehistoric remains in the tomb.

There are certain inconsistencies in the remains. Even the great antiquarian, Jone Smeet, who championed the authenticity of the document, admits the skeletons found were fossilized remains of the true homo sapiens, a type which did not exist later than 50,445 A. D. Besides, the manuscript is written in the dead language, English, which is still translatable by some of the great scholars of our time, and which was the scientific language of the world until nearly 100,000 years ago, but in the dialect form as written in the manuscript is known only in a few fragments, now preserved in the Continental Museum of Antiquity, dating back to the Golden Age of homo sapiens—the Twentieth Century.

But Dr. Smeet pointed out that these inconsistencies are adequately explained in the narrative itself, and science is rapidly discarding the theory that it is a hoax, perpetrated by a practical joker. It is believed to be a key to secrets of the past. The story of two bewildered primitive beings in a modern world is set forth in the text. As folklore of the 1500th millenium it is probably unequaled. But science is beginning to realize that it is probably much more than a myth.

DURING HIS LIFE among us, Victor Hansen spoke often of his Viking ancestors. They explored the seas, Victor declared, while he explored the ages. His words, doubted by some, were the only clue to his race. The Academy of Koro Instinct, in compiling what we know of Victor Hansen, does not seek to enter into the controversy which raged throughout Hansen's lifetime with us and which probably will rage long after we are dead. We will set out only what Hansen disclosed of himself in his valiant career and what was learned from that mysterious being, Georgiana, who appeared at his side on the battlefield of Xubra fifty years ago.

Victor Hansen said he was born on the tenth of July, 1910, in the city of St. Paul, Minnesota, wherever that can be. He died in the year 1,500,051, giving him a life span of 1,498,141 years. This must be accepted on its face value, because his glands lacked development enough to be tested for veracity by our machines.

He was 27 years old, he said, when he undertook the experiment that brought him out of the dim prehistoric past into our modern times. He was an embalmer, a profession which had to do with preparing the dead for burial. In his experiments to perfect a new type of fluid, he discovered a preservative that prevented not only the decay of tissues, but preserved life itself. It gave the human body a hardness of diamond, which could withstand even the erosive action of wind and water. It was his



In the center of a battlefield, with rays coming from all directions, this woman stood unscathed.

belief that life could be sustained for thousands, even millions of years by this method.

Assisting Victor in his work was a female *homo sapiens*, Georgiana Jonson, also of Viking ancestry. We may suppose that these primitive creatures had a certain lack of the emotional balance that is the characteristic of the Koro race, and between the two developed a type of mania which Victor termed love. The word appears frequently in old manuscripts which have been recovered from ruins, but a true definition has

never been given to us by scientists of our time. Victor, when he was informed of this, said that no true definition had been given in his time, either.

The mental state may be described as a mania for a creature of the opposite sex. The scientific mating of our own age has made such a mania obsolete.

In Victor's age, however, the mania was prevalent, and he was seized with a severe case. He became restless. His natural psychology was disturbed. The disease even affected Victor's appetite. From the symptoms, some of our mod-

ern physicians diagnosed the case as a sort of mental paresis, affecting Victor after a fashion that certain lower-type Korans are afflicted when exposed too long to the sun's rays in the stratosphere. It can be cured by several known drugs.

Victor apparently had no desire for a cure. He nursed his sickness with determination, and he became obsessed with a monomania for Georgiana.

She spurned him. Although they were often together in their work in conducting the ancient, barbaric funeral rites, the disease apparently was not contagious, or if so, it was slow to develop after an exposure.

Victor believed she was immune to the disease. He explained that his social status was such that she was slow in contracting the affliction from him. He received such a small compensation for his work that marriage, or the quarantine devised by the tribe for persons ill with love, probably would be distasteful to Georgiana, since it would entail much hardship. Georgiana sought quarantine with a more wealthy invalid.

Despite Victor's resignation to the loss of Georgiana, the disease gnawed at his vitals. Complications set in and he was beset with a desire for self-destruction.

Even in that age, however, the social instincts had made their appearance. Victor, in resolving to die, decided to do so in a fashion that would benefit his fellow creatures. He prepared a potion of his fluid that preserved life as well as cells. He wrote out his formula and that of the antidote which must be administered to restore life. He prepared a dose heavy enough to counteract any amount of the antidote for one hundred years.

He lifted the vial to his lips and drank deeply of the preservative.

Meanwhile, Georgiana had contracted the love disease from Victor. Unbeknownst to the young embalmer, she had decided to abandon her resolve to

seek a wealthy mate. She came to Victor's laboratory to accept his offer to go into quarantine together. Instead of finding her lover, she saw his preserved body on the floor.

"Alas! There was nothing left for me to do but join him," Georgiana declared.

But she did not do so at once. First she read the message he left behind. Learning that Victor was not dead, but preserved for one hundred years or more, she resolved to join him.

She used her savings to build a ventilated tomb in a cavern in some rocky mountains. A mineral spring was diverted into the tomb to work a mechanism cleverly devised by the young woman. Small deposits of the mineral would be left behind as the water flowed across the floor of the tomb. Georgiana arranged that when the deposits reached a certain amount, they would trip a lever which would plunge a hypodermic into Victor's shoulder. At Victor's side she placed a glass tube, containing food and an additional supply of antidote. A note in the tube confessed her love and pleaded with Victor to awaken her so that they could enter quarantine together.

NEAR the close of the hundred years in which Victor and Georgiana slept in the mountain, the geological forces that caused the lowering of the entire range in that vicinity, which is a short distance west of the Panhandle region, began working. The spring ceased to flow. Victor and Georgiana, forgotten by the world, slept on.

As they slept, the Third Dynasty of the world came to an end. Man was the Third Dynasty. Before man was an age of reptiles; huge dinosaurs roamed the Earth and ruled the Earth. Before the reptiles there was an age of fishes. Each dynasty was radically different from the preceding one.

The psychology of fish, as near as our

scientists have been able to discover, is one of living and reproducing. Fish have no other aims in life.

Reptiles, while living and reproducing, have a desire for power. They are stubborn fighters. They live, reproduce, and fight to conquer.

Man, the Third Dynasty, acquired a desire to *know*. Man lived, reproduced, fought and thought. But the thinking was not pure thought. Man was as anxious to learn a falsehood as he was to learn the truth. Sophist philosophy was accorded as respectable a place in man's system of knowledge as the great underlying truths of the universe. So many false concepts crept into man's lore that it was often difficult to distinguish what was true and what was false. Like the two dynasties before man, the Third Dynasty fell because it did not progress far enough.

After man came the Fourth Dynasty, the dynasty of the Koro race. While we live and reproduce, those things are not important. While we fight and think, they are not the motives of our civilization. The true Koran seeks truth. He achieves symmetry in thought, appearance and in his deeds.

Victor and Georgiana slept through the close of the Third Dynasty. The Fourth Dynasty struggled to be born. This struggle is known to every school child. In a million books the story is told of how our early types fought hideous, deformed, specialized descendants of the Third Dynasty. The specialized races outnumbered us, but they could not grasp the underlying truths of the universe. Their weakness caused their doom, although even at the battle Xubra, fifty years ago, our future hung in the balance.

Just before Xubra was fought, an earthquake shook the region. In some manner the hypodermic needle was thrust into the skin of Victor Hansen. Enough of the fluid entered his veins to cause him to awaken.

He found the sealed container left at his side by Georgiana and he discovered her sleeping body. Who could describe that reunion? They broke their fast with the food preserved at their side for thousands of centuries and stepped forth into a new and vastly changed world.

Instead of mountains, they found a vast plain outside their tomb. Above even the stars had changed. New stars had appeared. Old stars had faded. Constellations had lost their shape. Even the Moon seemed farther away. They knew that their sleep had not been a short one. It had lasted more than a million years.

AS these two humans stood bewildered on the Xubran plain they heard the sounds of the two armies assembling for battle. Victor heard the low, musical cries of our race. The pitch rose, terrifying, yet beautiful to this primitive creature. It was the screaming of a million maniacs, the honking of a vast flock of geese, the howling of a pack of numberless coyotes; yet it was musical, a symphony of terror.

In the distance he heard the faint roar of the advancing Xubrans. More human in sound, the cries also possessed an unearthly chant. Gripped with chilling fear, these two human beings crouched behind a rock and watched the two armies advance on the field of battle.

The flying Xubrans sailed into the air and hovered above our forces. Their psychological blasts threw our ranks in terror. Hundreds of our men were slain before our great thinkers could get into action and bring down the fliers.

Victor and Georgiana were mystified at this first brush of the battle. They heard no sound of weapons, yet men died. It was hard for them to realize that mental power was being used. The men of the two armies were thinking each other to death. Vast beams of fatal thought streamed across the field, to

drive soldiers into madness and death. Each thought impulse was magnified a thousand times by means of small transmitters. The Korans, because of their curious physiological make-up, were more sensitive than the specialized races, but our weapons were vastly superior because of our greater mental power.

Since the day when our first ancestors sprang from primitive man, we have known our destiny to become the Fourth Dynasty. Not a man hesitated now on the eve of this decisive battle.

"When the two armies approached near enough for me to see the individuals, I was horrified and frightened beyond my wits," Victor states in his account of the battle. "Georgiana swooned at my side. Men of both armies looked like fiends. The specialized fighters of Xubra, with savage claws, leathery hides and wings, looked like fiends incarnate. The Korans, eyeless, earless and noseless, seeing, hearing and smelling through sensitive skins, looked like nothing I had ever seen before. Both had human resemblances, yet neither race was human. Then when men began to fall on both sides without apparent cause, I knew great forces were at work."

Tulor, a captain of our forces, spotted the rock behind which Victor and Georgiana hid. Realizing its strategical value, he set out with a party of soldiers to capture the place. The withering fire of the Xubrans killed all of the men, excepting Tulor himself, who reached the rock badly wounded.

Victor did not know what to expect from this creature who appeared suddenly at his side, raving like a madman. To Victor's surprise, the man spoke in English—the language that has been spoken for untold ages on the Earth.

"Who are you?" asked Victor.

Tulor at first mistook the two human beings for Xubrans, and he turned his thought blast on the two of them. To

his surprise, it had no effect on their primitive minds. A ray so powerful that it could have paralyzed the brain of a Xubran in two seconds, left Victor and Georgiana unharmed.

Tulor gasped: "Tell me—are you creatures of the Earth, or do you come from another plane? Never in my life have I seen anything like you. You resemble pictures I have seen in a museum—pictures of ancient animals that once roamed the Earth!"

"We are a man and a woman," said Victor. "We are creatures of the Earth. How long we have slept, we do not know; but we have no desire to injure you. All we ask is safety."

"Safety! Creature, you are immune to dangers that lie about you. A few moments ago I turned my thought ray upon you. Tell me, did you feel anything?"

Victor shook his head. "I felt nothing."

Tulor turned on another blast of his ray. Victor stood unflinching in its path. Then Tulor swung the ray toward the Xubrans. Men in its path fell like straw. "See? You are able to withstand that."

"Stop!" screamed Georgiana. "That slaughter, it's awful!"

Before either man could stop her, she sprang to her feet and ran across the plain between the two armies.

For minutes men of both armies looked at what they thought was a miracle. In the center of a battlefield, with rays coming from all directions, this woman stood unscathed. She was dressed in clothing that was in tatters; her hair fell down over her shoulders; but she stood erect, beautiful in the moonlight.

The Xubrans thought her a goddess. The men of our armies, better versed in science than the primitive enemy, thought her to be a fossil come to life. The firing on both sides suddenly ceased.

Across the plain ran another figure.

It was a man. He stood beside the woman.

"Hold your fire!" ordered Victor, for it was he.

But the Xubrans were demoralized. Throwing down their weapons, they ran screaming from the field. Our armies advanced, cheering, to victory. The tide had turned. Our armies would never be opposed again.

The suicidal mania of a lovesick swain of the Twentieth Century had changed the history of the world in the 1501st millennium.

THE TWO "living fossils" were carried to our capital, Koropolis, in royal state. They were fêted and honored throughout the kingdom. Emperor Chrubo gave them rights of full citizenship, an honor which had never before been conferred upon a lower animal.

Our scientists began their controversy as to the authenticity of the two. Many of them doubted that a man and a woman could survive 1,500,000 years in a state of suspended animation. An inquiry was held. The following is a transcript of the record of the inquisition:

Question: Who are you?

Answer: My name is Victor Hansen. I am a citizen of the United States of America.

Question: On what planet is this located?

Answer: The Earth.

Question: What part of the earth?

Answer: Have you never heard of America? I was born in St. Paul. Surely you've heard of that?

Chrubo, interrupting: I recall a valuable fragment in our museum which carries on it a mystical incantation, "Chicago, Milwaukee & St. Paul." We have always believed it had some religious significance. Get it, will you, and let Victor examine it.

Victor—examining the fragment: It is a railroad time-table, sir.

Chrubo: You see! It is religious. The ancients worshiped time!

During the inquiry our scientists were considerably amused at Victor's primitive mathematics. It was the first genuine proof we have had that the Einstein Fables—which every mother reads at bedtime to her children—were fully believed at one time.

Question: What is the sum of two plus two?

Answer: Four. I know the answer to that one, all right.

Question: Two plus two do not equal four. The correct answer is three.

Answer: What? Two plus two has always been four!

Question: Let us hear you count.

Answer: One, two, three, four—

Question: How much is one and one?

Answer: Two—I think.

Question: That is correct. The first number doubled equals the second. It is only logical that the second number doubled should equal the third. Three follows two; therefore, two doubled equals three. There is no relationship between two and four.

Answer: I suppose you will say that two and three do not equal five.

Question: Of course not. Two and three equal three and one half. Any school child knows that.

Answer: But supposing three men came into the room, and only you and I were there to begin with. Wouldn't there be five of us?

Question: We are discussing figures, not facts. Supposing that you prove that two and three make five?

Answer: I'm afraid I can't; I'm not familiar enough with mathematics.

Question: We can prove that two and three make three and one half. Each numeral in our system, beginning with two, is double the number preceding it. If two twos are three, three and two would be three twos, or three and a half of three.

Answer: Your numerical system is different than mine. I'll stick to mine.

Question: Why is it different? We use the same figures.

MANY OTHER FACTS were elicited during the investigation. The outcome was that the investigators proved that Victor's mind was enmeshed with Sophist philosophy, which held that facts and figures should always correspond. It was as much as to say that if a man dreamed, he should do as he dreamed; that no fiction should ever be written; that lie and truth are the same.

It is unfortunate that a transcript of the inquisition found its way among the common people. Victor became more than the hero of Xubra. He was the leader of a new philosophical movement. Chrubo did the best he could to stop it, but at length he, too, was converted.

There was danger, of course, in the idea, but the people of Koropolis loved danger. Our mathematical systems were revised; dreams were made facts by law, and lies were judged to be truths wherever spoken.

Victor and Georgiana watched these changes sadly. In vain they tried to stem the tide. They could not stop the changes, however.

One day Victor appeared before the emperor. "I wish to report, your majesty, that Georgiana and I are no longer your subjects. We have returned to our own people," Victor said.

"That is the truth," replied the emperor. By law he could not answer otherwise. Victor had made a statement.

From that day to this, Victor and Georgiana have never been seen in our land. On this day, fifty years since the battle of Xubra, a hunting party discovered this tomb. In it slept bodies recognizable as those of Victor and

Georgiana. They were dressed in Xubran costume, indicating that after their departure from Koropolis they had made their home among these savage people. This manuscript is being left at their side, so that their true history may survive to a later age.

BUT the true history of Victor and Georgiana needs a note for its completion. The manuscript discloses that, beyond a doubt, they were misunderstood by people of the Fourth Dynasty, even the people of Xubra, who were the true dominant types of the dynasty. The Korans and Xubrans, like fish, reptiles and men, had their undoing in sophistry. Fish believed that truth lay in life and reproduction, and they were wrong. Reptiles were wrong even when they added struggle to their aims of life. Mankind, in seeking to correlate facts and figures with all-embracing knowledge, lost its race in domination. The Korans sought to legislate truth into being, when truth can only exist with a lie by its side.

When Victor and Georgiana came to live with the Xubrans, they did not seek life; they did not seek children; they did not want strife; they did not want knowledge, nor did they want truth. They gained all of these things.

Their children married Xubrans, who were not so fearful to look upon as the Korans claimed, but who were only slightly developed beyond the human stage.

The descendants of Victor and Georgiana of the Twentieth Century are known to be the founders of the Fifth Dynasty, which wants nothing and by wanting nothing gains everything. Another million years have passed, and the impulse to self-destruction by an embalmer's assistant in the Twentieth Century remains the luckiest thing that has ever happened to the organic kingdom.

A Study of the Solar System

Article No. 7 by John W. Campbell, Jr.



THE SINGLE CLUE

NO ASTRONOMER ever studies stars, planets or other heavenly bodies. Most astronomers believe they never will, though some hope eventually to be able to study other planets. There is a general misunderstanding of the life study of astrono-

mers; a bit of thought will remind one, however, that since no astronomer has ever reached Mars, none can have studied it. The astronomer spends his life studying light, radiation, and the characteristics of radiation.

All astronomical knowledge possessed

by man to-day has been obtained solely by the study of the single clue available to mankind: extraterrestrial light compared with terrestrial light sources. There is, perhaps, a very minor and unimportant exception to that: meteors and meteorites (a meteorite is a meteor that reaches Earth's surface) have yielded confirmatory data. But even that is largely misleading, since meteorites all contain enormously higher percentages of either silicon or iron than typical specimens of universal matter would. Present knowledge indicates that instead of iron or silicon dominating the universe, as meteors indicate, hydrogen probably constitutes at least one third and probably one half of all matter.

Thus, of necessity, an astronomer is actually a student of light, its properties, and observable phenomena of light.

The next planet to be considered in this series on the solar system is Jupiter. Jupiter differs so widely from the previously considered planets; Jupiter has done so much for this study of light, and, in turn, the study of light has yielded so much data regarding the planet, that it is imperative we understand better what and how we study, than that we simply quote facts.

The Greeks were not great experimental scientists; they preferred the domain of logic to actual experimental proof. But the Greeks did make some highly ingenious experiments, and their logic was generally sound. They had already developed two opposing theories of planetary motion: the stationary Earth circled by stars, Sun, Moon and planets; and the stationary Sun circled by the planets and the rotating Earth.

As an excellent example of their experimental ability, the Greeks measured the speed of sound thousands of years ago, and obtained highly creditable results. Modern methods depend on wave length of sound, and the vibration period of a column of air over water, or some variation of that; a highly technical,

though highly accurate method. The forthright Greeks did it almost equally well by having two men stationed on hilltops, each equipped with noise makers. A signaled to B and B replied to A. A measured the time elapsed between the time of his signal and B's reply. Then, knowing the distance A to B to A, and that time, they readily got the speed of sound.

NATURALLY, being interested in light, they tried the same scheme with it, using torches, or heliograph mirrors. Also, naturally, they failed to detect any elapsed time, since the twenty-mile journey took light so infinitesimal a fraction of a second. But that by no means meant that they had learned nothing; they had. They recognized it by adding to the first law of light—"Light travels in straight lines"—a second law of light: "Light travels at immense (infinite?) speed."

To understand the importance of this remember that Kepler worked entirely from Tycho Brahe's observed results, working backward from results to a theory which would account for those results. It was Tycho Brahe's extreme accuracy that made Kepler go to the elliptical orbits rather than the old circular-orbit theory, and derive the immensely important Kepler laws. In turn, Newton's laws of gravity were based on Kepler's discoveries. All worked back, then, to the accuracy of Tycho Brahe's observations.

But Earth moves in an orbit 186,000,000 miles in diameter. Thus it takes light almost exactly 1,000 seconds to cross that orbit at the actual speed of 186,000 miles a second. In observing Mars position then—since Mars is sometimes about 50,000,000 miles from Earth and sometimes about 230,000,000 miles distant—Mars is never where we see it, due to the time light spends in crossing that gulf of space; it is always at least 50,000,000 divided by 186,000 seconds

away from where we see it; and Mars travels at a speed of many miles a second!

The error is never less than that, and at times rises to 230,000,000 divided by 186,000. But Mars is large, and even that distance of motion is unimportant, so Kepler got the right answers. But—if light traveled only 186 miles a second, the results would have been utterly unintelligible. More than a million and a quarter seconds would have been required when Mars was on the far side of the Sun; in other words, Tycho's observations would have shown Mars where it had actually been more than two weeks before!

But the ancient Greek experiments had shown that light did not travel so slowly, so Kepler could go ahead with confidence. Knowledge of this property of light, high speed of travel, formed the basis of the greatest single discovery of all time to that date; Newton's gravity.

And the straight-line-travel knowledge made Newton's gravitational theory an immensely powerful tool for analyzing light. For straight line travel made light a good indicator of position, which sound, capable of rounding corners, is not. From position and change of position Newton's gravity theory was able to make light reveal something it did not intrinsically show at that time: the mass of the radiating body.

IT WAS Kepler's accuracy, based on Tycho Brahe's accurate observations, that made the elliptical-orbit theory partially acceptable. But the most ancient objection, and the most weighty with logical men, was still to be overcome.

All experience had definitely shown that unsupported bodies fall. Kepler was suggesting that unsupported planets, whole worlds, floated in nothingness on nothing at all. And an even huger Sun floated on less, if anything. It was obviously illogical.

Don't think they were foolish. They were perfectly right; it was completely illogical. All former experience denied it; that Kepler thought of it at all shows not their hard-headed reactionism, but his flight of genius. They denied the theory because it went against all known fact, and theories that do that are wrong, and we so regard them today.

In the very early part of the 1600s—the greatest century astronomy had ever known—Jan Lippershey's children were also illogical. It was an anciently known fact that a lens, while capable of magnifying things close at hand, blurred things at a distance. Two lenses made things worse—experimental fact which can be verified by any one. The telescope was impossible.

Jan Lippershey was a Dutch eyeglass grinder, and his inquisitive, inquisitive children played with their father's hard-made lenses. The recently invented concave lenses for short-sighted people were one of Jan's specialties. And his illogical children, not knowing that telescopes were impossible, modified the ancient third law of light—"Light may be refracted, or bent, from its straight-line course by any transparent medium"—to the extent of adding that if a concave lens is held near the eye, and a convex lens at a little distance from the eye, distant things seem near.

That was the invention of the telescope, and with this added knowledge of the handling and the properties of light, astronomy took a great step; the Kepler theory was established for all time. Galileo looked at Jupiter through his crude little telescope—of the type we would call opera glasses—and saw the four giant moons of Jupiter.

He couldn't say how an unsupported body could float in space, but neither could the critics say any longer, "All previous fact indicates that unsupported bodies fall." The four giant, un-

ported moons of Jupiter didn't. They could watch and observe a miniature solar system in action, with Jupiter as the sun, and the four moons as planets.

That was 1610. Naturally an immediate, vast interest was roused in these moons. They are so large, and so bright that they would be readily visible to the unaided eye, but Jupiter is so much larger, and so far brighter that his brilliant rays drown out the moons. But almost anything in the way of optical aid, even so inefficient as an opera glass, will make them readily visible. To-day a ten-cent-store telescope will probably be more powerful and more efficient than Galileo's triumph of optical science.

Not because we are smarter—simply because we know all the things Galileo learned before he died, and many, many things equally hard-working men learned and passed on to us.

The discovery of these moons meant that many observers watched them, and many turned the wonderful new telescopes on every other object in the skies. There were countless thousands of new discoveries—undreamed-of stars, beyond the range of naked-eye observation; double stars where one had been thought to be; mountains on the Moon; the phases of Venus and Mercury. For the first time men could readily see that Venus had a full, new, quarter and half stages. Ah, it was a wonderful time for astronomers!

AND ONE ROEMER, a Danish astronomer, in 1675, calculated the orbits of those four giant moons. First, of course, came a long and laborious period of observation, conducted when Jupiter was nearest the Earth, and visibility best. Fortunately, his task was made somewhat easier by the fact that the moons frequently went into total eclipse in the shadow of Jupiter's immense bulk. This eased things, because the inadequate telescopes of the day made it hard to tell exactly how many degrees along

in the orbit it was—but when it winked out, you knew accurately.

Then six long months of wearisome calculation was needed before the results were finished. Roemer had to wait anyway, to let any possible errors mount up till they would show, by adding in each swing around Jupiter. But at last, he again observed the moons, and timed those eclipses and—his calculations were six hundred seconds off.

Roemer knew he could not be that far off. Some hitherto unguessed factor had entered. It was like calculating the distance from New York to San Francisco in inches, and finding your result six miles wrong.

Roemer announced presently that the orbits of the moons of Jupiter were this and so, and that and such, and furthermore that the speed of light was immense, and was not infinite. It was about 180,000 miles a second. For the first time men had found a signalman far enough away to measure the speed of light!

And while they were learning to pin down the speed of light somewhere between "immense" and "infinite," which had been a hotly debated point for some twenty centuries, they learned another law of light, and cursed it with a heartiness and depth that would have left the sailormen of the time in awe. For the fourth law of light was: white light, refracted or bent by a lens, is broken up into colored images, because violet light is bent more than blue, blue more than green, and so on.

It meant to the astronomers that their telescope lenses were limited in size; a big lens was fine, but it produced images that looked like a water-color painting after a cloudburst. Astronomers had sighed, and turned to mirrors which did not have this failing—but plenty of others, nevertheless—as the only hope for larger telescopes.

The sixteen hundreds; the heyday of

astronomy! Kepler's elliptical orbits in 1610, or so, the telescope about the same time, the moons of Jupiter almost simultaneously; then Newton was born in 1643.

In 1680—approximately—the laws of motion were announced, in connection with the laws of gravity in Newton's *Principia* (The Mathematical Principles of Natural Philosophy). Nearly two centuries were to pass before any discovery of equal importance was to be made, one that could even challenge the vast scope of the law of gravity in its scientific implications. Gravity is a principle so completely fundamental that it can never, in all time to come, be forgotten. Telescopes may some day use no lenses; radio may be outmoded; but gravity is a fundamental and forever-important law.

IN 1666 the hated fourth law of light attracted Newton's attention, and he tried an experiment to prove that white light is a blend of colored light. He admitted sunlight through a round hole to a prism, getting then the familiar colors, ranging smoothly, gradually, featurelessly, from violet through blue, green, yellow, orange to red. By means of a second prism he showed that they could be recombined to a beam of white light. Newton proved white light was compounded of colored. It was a great discovery.

For the fourth law of light is the law of the spectroscope. By it, to-day, the secret language of light may be read; by it, light talks like a garrulous old maid at a gossip's tea party. It tells all the secrets of the universe. By it we can analyze the Sun and the million-billion-mile-distant star; we sample the air of Jupiter and Mars; and we time the speed of the moving stars. By it we analyze the minerals of Earth or star.

In 1666 America was a howling wil-

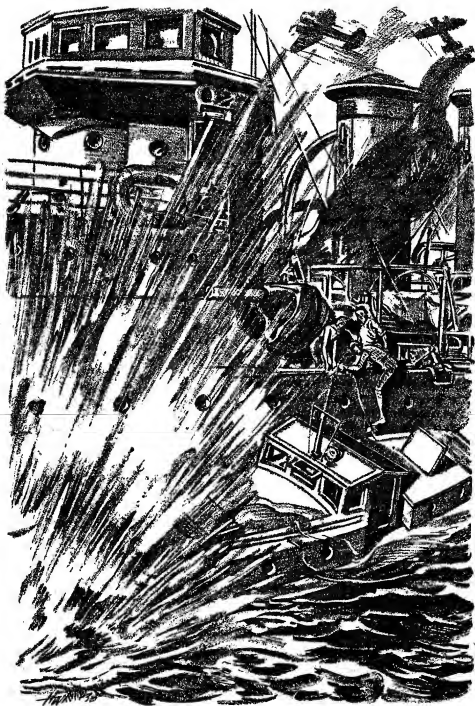
derness, where Puritan Pilgrims held on by tooth and toenail to a narrow strip of seacoast. England had just overthrown Cromwell. Men sought unicorns for their magic, cure-all horns. Oxygen was not to be dreamed of for a century and more. Chemistry, the basis of modern civilization, was alchemy, and men sought the philosophers' stone.

In 1666 Newton, the man who developed the law of gravity from idle speculation on a falling apple, used a round opening to produce his spectrum, and got round images of the Sun in every color, smoothly overlapping and featureless. A spectroscope uses exactly the same apparatus save that they have a thin, hairline slit, so that each color is thrown in a hairline, sharply distinguishable mark of light.

Literally, by a hairline Newton missed the spectroscope. Had he used a slit, the spectrum of the Sun would have been bright colors crossed by mysterious black bands and lines. He could not have left that mystery untouched. He would have found that sodium thrown on a candlewick would produce bright-yellow lines matching exactly two powerful dark lines in the mysterious solar spectrum. Calcium would have given him red lines, copper and other metals—

Chemistry would have started up like a stung rabbit from spectroscopy, not test tubes! Oxygen in a year, not a century and a half. The elements of the rocks in months.

But spectroscopy waited untouched from 1666 to 1802. Can you conceive what an alien world this might have been had the man who mastered gravity, calculus and the laws of motion used that slit, the one great thing that challenges gravity for supremacy in teaching mankind?



A fair hit on the patrol boat blew off its bow. It went down in seconds.

The Incredible Invasion

*Concluding a gripping serial novel of
the earth and its dimensional secrets*

by Murray Leinster

XI.

AS the scale-armored figures plunged toward him, bunched together for courage, Steve slaughtered them. He rested the automatic rifle on a steam pipe and traversed it with an inhuman deliberation. Bullets poured from its muzzle in a deadly stream. A storm of lead poured into the charge. It shattered it. Of the men who had composed it, a dozen dropped at once. Ten more dropped as they recoiled from the slaughter. More flung lead dropped all but three of the balance. And two of the three were Leaders, judging by the whips which dangled from their wrists.

Steve savagely concentrated on them. One crashed down with half a dozen bullets between his shoulders. The other screamed shrilly as bullets pulped his left arm. He careened through a doorway and continued to squeal shrilly.

"Not much nerve," said Steve in icy calm. "Those Leaders ought to learn to take it."

"Now what?" demanded Nick.

"Oh, there'll be more of them coming," said Steve, "and we'll kill them, and presently they'll kill us."

Lucy said: "W-will you tell me when you think you—can't hold out any longer?"

Steve jerked his head to face her. She was pale, but she smiled at him. If her voice wavered, she could not help that.

"We—tried, anyway, didn't we?" she asked cheerfully. "But after what Fran said, I don't want to take any chance of not being killed."

She touched the revolver in a holster at her side, over the Invader's armor she wore. Steve swore savagely, then.

"We're fools, Nick," he said bitterly. "Fools! Because we hate these devils, we've thrown away our lives! We could have made a break for a place where they haven't struck! The cordon was down! There was nobody to stop us! We could have broken through, and told what we knew, and organized men to fight."

Nick pulled out a pack of cigarettes and was absurdly painstaking in his choice of one.

"Rather late to think of that now," he said. "But we'd better be moving, Steve. We don't want to stay here!"

"Why? What more can they do than kill us?"

"They had spies," said Nick. "And those spies would know something about tear gas. And your friend Fran Dutt didn't speak very highly of their methods of execution."

Steve suddenly flung up a revolver and fired at a man dodging past a window. The window smashed. Something came in and exploded with not at all alarming violence.

"That's gas now," said Steve. "Come on!"

He took Lucy's hand. With Nick on

the other side of her, they broke into a sudden sprint. Steve swerved sharply as something else sailed in and burst, ahead of them. He plunged for the wall and tore wide a small door there. A spiral stairway went up and up—and descended to the ground.

"We can't go down!" said Steve harshly. "Mobs of them down there! We're going up!"

HE RACED AHEAD. For seconds, for perhaps half a minute, there was no pursuit. Initiative was not encouraged in the Underones by the Leaders of the Invaders. Steve reached a landing with the others close behind. He halted and listened. A small window was close by. He peered out.

"I wish," he said between his teeth, "I wish we could convince 'em we'd gone down! Something to throw to make a noise in the courtyard below, there! What can I use?"

Nick was helpless. Concrete walls. Concrete floor. Steel spiral stairway. Nothing—— But Lucy reached up.

"Here's a light bulb," she said quietly. "It'll sound like a shot when it goes off, too."

Steve took it from her fingers. There was a sudden babbling down in the stair well. Men had at last pushed open the small door through which the fugitives had vanished. There was no sign of them. A voice bellowed arrogantly. Men started both up and down the spiral.

Then the light bulb struck outside. It made a sufficiently loud *pop* to sound like a shot to ears unaccustomed to firearms. The arrogant bellow rose in pitch. Men tramped down. Shoutings arose.

"Go quietly," said Steve under his breath, and again led the way.

He reached out and gathered electric bulbs as he passed through, and Lucy imitated him when they reached the top of the stair and came out into the office-like spaces above the generator room.

There were many light fixtures here. Nick blinked, and filled his arms when Steve offered to load him.

"Now we go up again," said Steve. "I've got a hunch."

They climbed interminably, flight after flight of steps. And up here, of course, the Invaders had no occasion to go. What few figures they saw were those of power-house employees, stiff and stark for the second time.

Suddenly they came out upon the power-house roof. Here was a small platform and a sort of hut from which one might see very far indeed down the river and Narrows, and across to Manhattan on the one hand and almost to Coney Island on the other.

Steve went to the edge of the roof and peered down. All was still. But he saw a few scurrying figures. He flung out half a dozen electric-light bulbs. When they struck, they created a commotion by their sound. None of the Invaders actually saw them. They merely heard the noises. And Steve—making due allowance for wind—threw two more, and then three, and a half dozen, and saw an intensive and extremely cautious search begin among the buildings half a block downward from the power house.

"They'll think we've gotten away," said Steve with some satisfaction. "They consider that they heard us shoot, down there. They'll never suspect we're actually up here."

"But—what are we going to do?" asked Lucy.

"Wait for night. I threw those bulbs farther away with every batch. They sounded like a rear-guard action as we ducked. We simply wait for night."

He sat down. Slumped down, really. "And what are we going to do when night comes?"

"Sneak away," said Steve in weary bitterness. "Heaven knows how much of America they've got in their damned plague spots now! Fran said they'd

take Philadelphia and all the other Eastern cities. If they take 'em, they can hold 'em, unless we can get somebody to listen to us. And I doubt that we can. Every man in America who was qualified to understand what's happened has been caught by now. They swarmed here to find out what the trick was. And they've learned!"

His lips twisted bitterly.

WIND blew strongly but irregularly across the top of this high building. From here they could see the small vessels of the river moving again in blind, unguided fashion toward either grounding or collision. They could see the cities spread out, with infinitely small specks which were human beings in cataleptic trance, and larger dots which were catastrophes.

"I wish," said Nick, "I wish I had my cameras."

Time passed. The last of the moving dots, which were vessels, became immobile. The cities were utterly still. It became midday.

At one o'clock, and two, and three, there had been no change anywhere. There was a feeling—hardly an impression, more probably a hunch—that frantic activity went on in the power house below. Steve watched over the roof edge, however, and saw not even movements of Invaders on foot. But he could not see into the courtyard through which they had entered the building. At four, though, they did see a motor truck moving on a street in Manhattan, and at about five thirty one of the great smoke stacks of the power house belched out lazy clouds of dense black smoke.

"Firing boilers," said Steve. "What'll they be using power for?"

Nick painstakingly changed the dry cells in his high-frequency pack.

"Oh, for a life on the ocean wave!" he said gloomily. "Steve, this——"

But Steve stared at him suddenly, and grinned.

AST—7

"That's an idea!" he said. "Is it the naval militia you belong to, Nick?"

"Uh-huh," said Nick, surprised. "Sure! What's the idea?"

"Come over to the edge of the roof," commanded Steve. "Take a squint down into the navy yard. You'll take command to-night, if we have luck."

He took him to the edge of the roof. He pointed. He and Nick seemed to discuss some plan in detail. Steve came back, leaving Nick flat on his stomach, studying the ground below.

Lucy looked up at Steve and smiled.

"Woman," said Steve gruffly, "now that we've got a chaperon and he's busy, let's put something over on him! Come around the corner and get kissed."

Lucy stood up. They walked together around the corner of the grubby little penthouse atop the power-house roof.

"I—I thought," said Lucy, only seconds later and somewhat breathlessly, "I—was thinking to-day—when it seemed like we were all going to be killed—that it was horrible to have it happen without really having—kissed each other since—all this began. We've been together for days without saying a word about—caring for each other."

She was interrupted. She did not seem to mind.

"But I'm glad," she said illogically, an instant later, "I'm glad you felt like that!"

AND THEN there were footsteps inside the penthouse. The door opened. A figure came out, looking curiously around. It wore the scaly armor of the Invaders. It saw Nick, lying flat on his stomach and gazing downward. But Nick happened to be motionless at the moment. The figure gave him only a glance. It gazed interestedly at the river and Manhattan over the water.

Steve drew his revolver, disengaging his arm from about Lucy with a slow precision. She saw his face. She whirled. The Invader was less than

fifteen feet away. Lucy cried out in a choked voice.

Steve shot him. There was nothing else to do.

While Lucy wrung her hands, Steve faced the penthouse door. But the wind blew strongly at this height. The sound of the shot was loud, to be sure, but most of it would go upward. The wind blew some of it away. Unless there were other Invaders close below it, it might go unheard.

Nick came running lightly, a revolver in each hand.

"Here's armor for you, Nick," said Steve grimly. "If this chap just came up here to look about, we may be all right. But if he's missed, it'll be just too bad!"

For five minutes, for ten, they waited desperately for the penthouse to erupt charging figures. None came. Then Steve opened the door, with Nick ready to pour a storm of fire within it. The penthouse was empty. The man had been alone.

Nick stripped him of his scaly armor and sighed gustily in relief when he had donned it, though he left the high-frequency pack in place until he was sure it was safe.

"Now I feel better!"

But they continued to stand guard over the stairway from below. If one man had come up, others might. And an alarm, now, meant that they were trapped like rats. The man they killed was an Underone, doubtless slipping away from the supervision of the Leaders to gaze curiously at the mighty cities he and his kind were to loot for the exclusive benefit of his superiors.

Because of that watching, the three on the roof were not really aware of the stirring about the gates of the giant power house. Because of the wind, blowing at this height, they did not hear the purring of motor trucks begin. And because of their preoccupation they did not see the extraordinary appearance of

Manhattan across the river, when night fell.

In the gathering night the greatest metropolis of all the world lay silent and motionless and seemingly dead.

Darkness settled down. High in the air, they might have been the only human beings living anywhere. Save for the Invaders, they were the only quick among ten million dead, for whom the cities were mausoleums.

"We might as well try to make our break," said Steve. "You've got your bearings pretty thoroughly, down below?"

"I know the way backward," said Nick confidently.

"Then let's get moving!"

Steve took Lucy frankly in his arms and kissed her, and then led the way down the long, many-stepped stair to the ground. They had checked over their weapons. The automatic rifles were ready for instant use. The revolvers were all fully loaded. And Steve, using Nick's no-longer-needed high-frequency pack during the change, had shifted his scaly armor from beneath his clothing to the outside. He might pass as an Invader, in a sufficiently dim light.

IT WAS in the appearance of Invaders, then, that they descended. And, as they went down, they heard the faint whining of dynamos, and a dull rumbling which could not be anything but trucks. Once they heard voices behind a door on one landing of the stairway.

They reached the spiral stair and descended that. They came to the doorway through which they had escaped from the generator room. The drone of dynamos was distinctly audible, but there was another louder noise elsewhere. Descending, that other noise became loud indeed. Suddenly they had reached a hallway, and some one moved near by. They walked quickly, but very quietly, through the nearest other door, and they were in the courtyard into which they

had driven the Q. M. C. car that morning.

It was a scene singularly like the one in the trolley terminal in Newark. A platform, with a helix of heavy bronze bars inclosing it raised above the ground. A ramp led to the platform, and a wavering, bluish light flickered above the bars of the helix. A truck rolled into the courtyard, up upon the platform, flickered—and was not. Then another and another and another.

An unending stream of heavily laden vehicles trundled in the gateway. One by one they rolled up into the coils of the helix. One by one they vanished utterly—and the fact that Steve and Lucy—and Nick too, now—knew that they simply had had the direction of their atom poles changed did not make it seem the less magical. Their atoms changed the direction of their poles, and they became matter of another sort than the matter of our world, and vanished from it. But they also became matter of the same sort as the strange world from which the Invaders came, and they appeared in it.

Suddenly there was a warning flash of light, and the stream of trucks checked. Men materialized from nowhere upon the platform. They were clad in scaly armor. They were Underones, and they gaped at their surroundings as they shuffled docilely off the platform into the courtyard. Voices roared harsh orders at them. They formed over at one side of the open space. The light flashed again, and the movement of trucks began once more.

The men from the Invaders' world filtered out the entrance in groups of four and five and six. Passenger cars whisked up, halted, and darted away fully loaded.

"Efficiency!" said Steve coldly. "They've been taught to drive in the other world. Cars have probably been taken there during the last twenty years

and more for their training. Now they're brought here, hauled out, told to find trucks and load them up with whatever loot is to be taken out, and drive them back. Efficiency, eh? I'll bet they've even studied maps of the city!"

There was a muffled clanking sound behind them. Men came out of the doorway they had just quitted. The flickering bluish light of the helix lighted up their bodies. Their armor, though scaled, glittered with the prismatic colorings of many jewels. They carried the metal-studded cane whips which were symbols of nobility. There were arrogance in every movement, in every pose.

The three Americans stood in deep shadows. They were heavily armed, as Underones seemed not to be, but otherwise they would pass to the casual eye as Invaders themselves. Steve's eyes darted here and there, searching for a way to slip out of this crowded place unobserved.

HE WAS so intent that he did not notice the just-emerged group. Nick stared open-mouthed at the quite incredible phenomenon of giant motor trucks vanishing like so many bubbles in the midst of the flickering light. Only Lucy heard, and turned, and gasped.

The group swaggered on. One of the lesser Leaders brushed against Lucy. He rasped at her. He raised his whip and lashed savagely at her. Lucy cried out in mingled terror and pain—and Steve went mad.

He whirled, to see the lash descending on Lucy's face. Steve became an entirely primitive man. He had an automatic rifle slung across his back and four revolvers at his waist. But he roared inarticulately and sprang. His hands closed about the throat of the man with the whip, just as that man realized that Lucy was a girl and was half stunned with amazement. The two of them went to the ground together, rolling over and

over, with Lucy crying out to Steve to stop.

The balance of the arrogant group gasped in incredulous shock at the sight of an apparent Underone daring to lay hands upon one of their superior mold. Then voices raised in thick cries of fury. Whips flashed aloft, their metal lashes glittering, to rake the flesh from the bodies of these unspeakably insolent Underones.

Nick opened fire with his automatic rifle. He, alone, had kept his head. He knelt down, very coolly, pulled the continuous-fire stud and played the rifle upon the armored men as if it had been a hose. They collapsed in a kicking and suddenly shrieking heap. A man cried out, choking, and a wave of horror filled the whole courtyard with a panic greater than merely terror of Steve and Nick and Lucy. Nick had killed men who were important among the Invaders. He had killed, in fact, thirteen of the Leaders of highest rank.

Some of the Invaders gasped and fled. The Underones, especially, scuttled off into the dark like rabbits. Lesser Leaders, who an instant before had been the very embodiment of authority, ran agitatedly about, bawling orders which an instant later they countermanded.

Steve stood up and said thickly: "There's one damned swine who'll never lay his finger on Lucy again!"

"You fool!" panted Nick. "You've played hell! But come on! Let's get out of here before they get back their senses!"

He shook Steve's arm, and Steve said grimly; "All right, then. Lead the way. You know it!"

They ran out, the three of them, and once blundered into a knot of men who shouted and fled—though not before Steve had emptied a revolver into their midst. Then the dark street and the line of passenger cars waiting for Underones to be taken out in quest of trucks and

loot. Steve roared and charged the first car. Men fled terrifiedly.

Steve thrust Nick into the driver's seat, Lucy in next to him, and climbed on the running board with a revolver in his hand, as Nick sped off into the darkness.

In minutes, the car sped into the navy-yard gateway, narrowly missing the stiffened form of the guard who had lain immobile since the city went dead.

Then Steve was saying anxiously; "But Lucy, did he hurt you? That whip—did it cut you?"

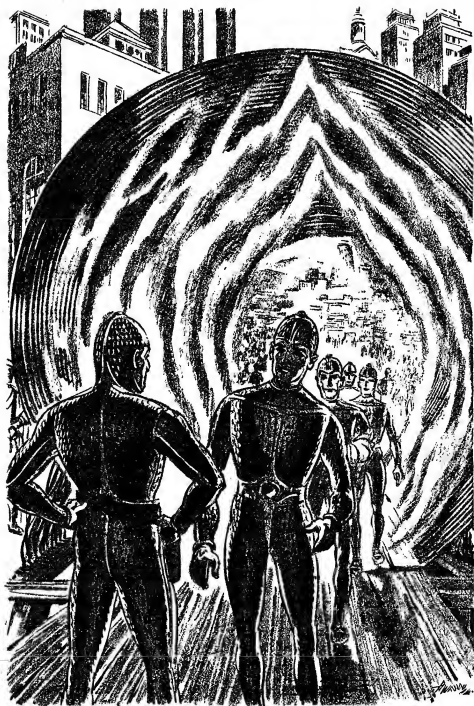
Nick expertly threaded a maze of roadways, each one of which he had learned by inspection from the powerhouse roof, and brought the car to a stop beside a dock. In the starlight the deck house and upper works of a fast patrol boat reared up beyond the wharf deck.

"Diesel engines," panted Nick. "I think I can start 'em. Don't know how much fuel, but we can get going. You cast off while I see what I can do below."

He jumped to the deck and hustled below. In seconds, it seemed, there were lights down there. He had turned on the battery illumination system of this craft. There was an uproar about the power house which was audible even here, but the three of them paid no attention.

Steve anxiously inspected Lucy's face by the light coming up the engine-room hatch. There was but a single cut on her cheek. The helmet and collar of the scaly armor had absorbed the rest of the whip blow.

A sudden roaring, throbbing sound set up. Nick bobbed above the hatchway and babbled profanely. Steve ran to the lines and cast them off. Water thrashed below the patrol boat's stern. She backed out into the river. Nick wrestled mightily with the gears and clutch and sent her forward again. Then she swept downriver at full speed.



*"Steve, we've had our revolution. We've got this city—the one you see—
and we'll get the others."*

XII.

IN A DEAD WORLD there are no laws. Therefore the small patrol boat sped through the night without riding lights or any other thing to betray her position to possible pursuers. Her draft was small. Her speed was reasonably high. Steve, at the wheel, sent her streaking for the high seas. And, upon consultation with Nick, they agreed that it was unwise to use the radio close to New York. Wherefore they cleared the land and set off to southward along the Jersey coast.

For an hour or more Nick puttered over the engine—running much risk of doing more harm than good. He then poked about among the stores, and at last managed to come to some decision on the amount of fuel there was on board and the boat's probable cruising limit. He came up to the wheelhouse to report, and yawned as he did so.

"All right," said Steve, and yawned with him. "We'll keep going till day-break, and then start the radio. That will be far enough."

"It should be," agreed Nick. "Steve, this hero business is wearing. I'm going to sleep on the engine-room floor."

He stumbled away, to throw himself down on the steel decking and fall instantly asleep. Steve settled down to an age-long vigil. But he was at least as weary as Nick was. He dozed at the wheel, and Lucy smiled maternally upon him and stood shoulder to shoulder in the darkness, steadying the boat on the course picked out practically at random.

Steve dozed, and jerked awake, and dozed again, until hours later when Lucy shook him, crying out that she saw a light. Which, of course, should have meant living people. She ran to wake Nick, while Steve steered toward it.

It turned out to be an automatic beacon, of the sort which is run by acetylene, is controlled by a photo-cell, and operates for three months at a time with-

out attention. The only conceivable virtue in the incident was that Nick took the wheel of the patrol boat for the rest of the weary hours before dawn, while Steve slept the sleep of the utterly exhausted.

At dawn, Lucy investigated the galley and they drank coffee in the dawn light, while the patrol boat, with an unskillfully lashed wheel veered remarkably from its course and nearly ran ashore.

A broadcast receiver in the skipper's cabin gave them news while they ate. It should have taken their appetite, but it did not. The only station they could tune in was one in Chicago, despairingly broadcasting at what was four a. m. by Central time. The announcer said drearily:

"Rioting on the lake front, which began at four this afternoon when mobs tried to storm the wharves of lake steamers, is still continuing. Six policemen have been killed. The number of civilian deaths has not been ascertained, but at least thirty persons, many of them women, have been torn to bits by the mob which struggles to escape the city before the plague strikes."

Nick blinked at the other two. The announcer went on more drearily:

"At midnight, the mobs which have blocked all exits from the city moved nearer the center. All efforts of car owners to leave have been nullified by these mobs. Every car which has attempted to get through has been stormed by panic-stricken people, fighting for a place in it. In most cases the cars have been shattered past all usefulness, the mob thereby defeating its own ends. At present, gangs of men and women are raiding private garages to seize cars for escape."

Steve drank meditatively and put down the coffee mug.

"In other cities rioting continues. St. Louis is still under martial law, which means that the authorities have not yet been overwhelmed. Pittsburgh is a city of madmen, according to advices broad-

cast from there. Three fourths of the population is frantically trying to leave the apparently doomed city. The balance, hopeless of escaping the plague which yesterday wiped out the Atlantic Coast from Boston to Washington, has given itself up to frantic revelry."

Lucy uttered a cry of dismayed horror.

"Boston to Washington! Millions upon millions of people!"

"Moral effect," said Steve. "They can't loot all those cities. But they smash our civilization with the panic induced in the part not seized. You remember Fran said they were afraid of us."

The announcer went on dispiritedly:

"The last advices lead to the belief that the plague has ceased to advance. But it was quiescent for a time after overwhelming Newark. The cities known to have been wiped out include Albany, Schenectady, and Troy, in New York, besides New York City proper. And Trenton in New Jersey; Scranton and Philadelphia in—"

The voice droned through a long list of names, from Maryland north to Massachusetts. It went on:

"It has been noticed that only the larger towns have so far been affected. No city much under one hundred thousand population has so far been smitten. The meaning of this oddity is not yet known. Flash. Niagara Falls is believed to have fallen victim to the plague. No communication has been had with that city since early to-day. The water power from the falls, both American and Canadian sides, failed at eleven o'clock."

Steve said calmly: "They would hit at Niagara. There's plenty of electric power there! With arcs of power-transmission lines, the trick we tried in New York yesterday morning would revive a good many thousand square miles. If we have to work on a long-time basis, Nick, we'll fix up a sort of army and try to seize that for a base of operations."

He switched off the radio.

"Let's try to start something. You all set, Nick?"

"Yes," said Nick. He gulped down the last of his coffee. "It ought to take 'em an hour to reach us from New York after we start sending, even if they use planes. And I doubt that they can handle them."

LUCY said nothing. But she started to clear away the dishes from which the two men had eaten, as they went to the desk which was the radio room.

Nick sat down at the patrol boat's small transmitter. With somewhat the air of a musical performer he adjusted small controls, flipped over a switch, listened keenly on a head phone as he ran through the short-wave bands, and reached for the key. He sent swiftly and smoothly, talking quietly as he sent.

"I'm tuned to a channel already in use. Sent emergency attention and snapped to hook in a directional antenna and will get my stuff through that. Said a scrambler would be at work on me and this was official and emergency." He flipped a switch and flipped it back again. "The Invaders are at it already, trying to jam the air. There's a chance, though, that the angle's big enough to separate us. We've got a directional antenna, too. Wait a bit and I'll tune it in. They use it for navigation in fog, sometimes."

He worked for a moment or so, swinging a control with one hand while he alternately sent and listened.

"Good! I've got him. He's catching me. Hears the scrambling, too! Now I'll shoot the works!"

He poured out his message for five minutes without a pause. He listened, and sent again. At the end of the second transmission he jerked back his head.

"He wants to know what frequencies neutralizes the stuff?"

"It must be under fifteen thousand cycles," said Steve harshly, "because it

doesn't seem to radiate at all. The feeder wires carried it all over New York. And it's probably over ten."

"Sounds most likely," said Nick composedly. "All right. I'm telling him."

His hand wavered imperceptibly at the key. He sat intent and earnest, now listening concentratedly, at odd moments sending a few symbols. Then he flicked off the switch and unconsciously brushed off his hands.

"It's done," said Nick. I had about six hams—amateurs—listening in on me—all on directional aërials, which cut out most of the scrambling. And every one of them swore that his first job—even before making a high-frequency pack for himself—would be to spread the dope I gave them over all the rest of America. But it's doubtful how much good it's going to do. Every one of them says his own town is crazy with terror. Our whole civilization's going to pot. But we've done our stuff! Now what?"

As if to answer the question there came the stuttering, droning hum of an airplane motor. Then another. The sound became the deep-toned, distant roar of many engines.

Steve plunged to the deck to see. Small, wabbling dots appeared in the sky—not from the direction of New York, but from the West. Philadelphia, perhaps. There were all of a dozen planes, but they had not the riveted, rigid look of an army formation. These planes were flown by men who had had little experience in formation flying. It showed the raggedness of their intervals and in the variation of those intervals in flight.

Steve straightened out the uncertain course of the little patrol boat.

"This is hell!" he said with an extreme calm. "I'll have to run the boat ashore, and we'll take to the woods, eh?"

The planes were still a very long distance away—bare specks against the sky.

"We must be—almost past the dead

area," said Lucy uncertainly. "If we could get help——"

"There's a navy boat," said Nick crisply. "A cruiser!"

STEVE STARED. A nearly formless gray blob upon the sea, it floated aimlessly. It gave no sign of life at all. Steve suddenly realized that they had not seen one sea gull. The dead spot, then, reached out to sea. He swung the bow of the patrol boat around. Nick dived for the engine room.

"I'll see if I can get more speed out of that engine of ours," he said hungrily. "The cruiser'll have anti-aircraft guns."

"Better than that," said Steve. "She'll have dynamos on board, and fighting men! And an arc——"

Nick uttered a cry which was almost a yelp of joy, and vanished down into the engine room. The engine's speed picked up, but almost imperceptibly. The little patrol boat bored through the waves, straight for the far-away war vessel.

But the planes came on. There is nothing more impressively military than aircraft in combat formation. Yet the least uncertainty, the least deviation from mathematical exactitude, and there is nothing much less so. These planes came on swiftly, and they were handled competently enough, but without the precise deadliness which would have destroyed all hope of escape.

Their droning hum rose to a growl. From a growl it became a roar. From a roar it rose to a thunderous, deafening reverberation which filled air and sky and sea with sound. And then the first of the planes dived. The sound of its motor rose in pitch. Steve jerked over the wheel. The patrol boat heeled over as it swerved.

The wings of the plane hung batlike above the fleeing craft for the fraction of an instant. Something small and smoking dropped from it. It struck a wave and exploded with a racking de-

tonation. A miniature wall of water flung the patrol boat's bow aside—but the plane had gone on ahead.

Steve straightened out, his lips tense. But he said evenly to Lucy: "That wasn't as bad as I expected. Watch out for me!"

A second plane dived. Lucy watched, her face ashen.

"Coming! He's leaning over——"

Steve jerked the wheel frantically. Another miss. This bomb exploded in mid-air. Steve glanced up.

"I begin to think we've got a chance," he said. "These chaps are amateurs. The Invaders didn't expect to fight. They didn't train for it."

Again the rising whine of a plane diving for them. The two foremost now roared on ahead. The third plane's roar grew more and more intense, until it seemed almost upon them. Steve, blanching, flung his head around to see the big passenger ship no more than fifty feet above the water and two hundred feet behind. There was no possible chance to dodge. He saw the pilot fling his missile—a cylindrical thing with something that smoked trailing out behind it. It struck the water no more than ten yards ahead. Spray fell all over the patrol boat.

"Dynamite," said Steve. "No regular bombs. Get Nick up with a rifle. Quick! Then take the wheel!"

He zigzagged desperately. There came another savage, rasping whine, as another plane dived down to repeat the tactics of its forerunner. From fifty feet up, the patrol boat was a target that simply had to be hit before long. Lucy reappeared, breathless, as Steve was about to abandon the wheel regardless.

He seized his rifle and shouted to Nick: "The propeller! Smash it!"

NICK OPENED FIRE. Steve flung bullets at the cobwebby disk before the fuselage. There was a sudden shrill squealing sound. Something went flying

away, shrieking. The unbalanced propeller set up a terrific vibration. The plane shot past the patrol boat before the pilot could even cut off his motor. It struck the water with a terrific crash—and instantly thereafter vanished in a gigantic detonation. The explosion wave made the patrol boat careen dangerously.

Yet another plane had essayed to dive, but it leveled off. It climbed and dropped a scattering handful of dynamite sticks from two hundred feet or more. Some of them went off from the impact when they hit the water. Others vanished harmlessly.

"If one of them hits our deck, though, it'll go off!" said Steve grimly. He called loudly above the dim of motors. "Keep shooting, Nick! Keep 'em aloft!"

The patrol boat sped on. The flight of planes swept past, peppering the sea about the fugitives with explosions, none of which were comparable to an actual aircraft bomb, but any of them certain to do deadly damage to a craft as small as this. It was easy enough to understand, of course. The Invaders had not anticipated battle, but a raid. Nor combat, but looting.

Faced with an emergency and furious orders from their surviving Leaders, those who had gone to prepare for the looting of Philadelphia had taken what civilian planes their fliers knew how to handle, had loaded easily discovered dynamite in them, and taken off in a desperate attempt to obey orders.

But their lack of practice in battle tactics was apparent in the fact that, having dived for and dropped bombs about the patrol boat, the first ships dared not swing sharply about to bomb again. They feared to foul their followers. They sped on and went about in a huge circle, their ragged formation following them, and then swept across above the patrol boat again.

Again there was a rain of death from

the skies. Detonations and spitting flames and columns of spume and spray sprang into being all about the dodging, darting small boat. Once a tall column of water fell athwart its stern. But save for a smashed hatch and some hundreds of gallons of water admitted, there was no damage.

Steve had steered erratically, as if dodging without real purpose, but he sped desperately for the cruiser as soon as the second rain of bombs was over. Nick coiled a rope, which he hastily knotted to a small-boat grapple.

They came alongside the cruiser just as the squadron of planes made a ragged turn. Nick heaved up the grapple. In seconds he was swarming frantically up the line. In seconds more he was hauling away at Lucy, to help her up. And then, just as Steve dragged himself to the cruiser's deck, the roar of motors filled all the universe again with unbearable sound. Dynamite exploded beside a ventilator and shattered it.

A fair hit on the patrol boat blew off its bow. It went down in seconds. More dynamite ripped the cruiser's deck astern. Nick dived for a steel door. Steve dived after him, while detonations and crashings resounded all about.

But a cruiser is not as easy to sink as a patrol boat. One stick of dynamite will tear up planks and dent mild steel. But even a light cruiser requires more than even a case of dynamite to produce real damage.

THE THREE AMERICANS hunted eagerly. They found the commander of the cruiser. Steve swung down from his back the high-frequency pack with which he had first protected himself, which had wakened Nick when Fran Dutt ruined Nick's own pack, and had been used again by Steve when changing his Invader's armor to the outside of his clothing for a disguise.

He put the pack on the naval officer and turned on the switch. The little

tongue of metal began to vibrate. A tiny blue spark flickered and danced. High-frequency currents, which he could not even feel, coursed through the officer's body. And he awoke.

He had been in the act of drinking his after-lunch cup of coffee when the plague struck his ship. Now he swallowed automatically, stared at the three weirdly armored figures who stood before him—and then heard the crashings and felt the shock of bombs falling on the cruiser's decks. He leaped to his feet.

Steve said sharply: "Commander, your ship's being attacked by the chaps who're responsible for the plague you've probably heard of. Your crew is under its influence now, and you have been. But if you'll help us, Nick and I will make an arc and get things going——"

From a distance, the cruiser would have seemed to be in a bad way during the next quarter or half of an hour. It floated aimlessly upon the water. Planes darted about and above it, raining down small black things which exploded upon its decks and filled the air with flames and smoke. It seemed as if the cruiser were helpless.

But suddenly the war vessel awoke. Its commander's voice roared out of the speakers which filled every deck and compartment with sound. Order after order issued from his lips. And, in the navy men obey orders first and ask questions afterward.

At one instant the ship was a helpless, floating hulk with the reek of dynamite about it. The next instant its cannon moved. Men flung themselves across its decks to anti-aircraft guns. And suddenly it was spitting flames exclusively its own.

In three minutes its gunners brought down two of the Invaders' planes in flames, disabled four others whose pilots were able to land without crashing, and a lucky shot hit the store of dynamite in the cockpit of another. It vanished in a colossal sheet of flame which

suddenly doubled when a second plane shared its fate.

Three planes of the squadron turned and fled for the distant shore. One of those wavered in its flight, abruptly turned over in mid-air, and then dived straight into the waves. A bullet had weakened some control wire to the breaking point. Two planes, only, reached land.

The crew of the cruiser could not live beyond the steel hull of the ship, into which high-frequency current was poured by a giant arc. They could not get to the small boats. The cruiser itself—when steam was had again—swept slowly up to the disabled, sinking planes. Nick flung ropes to the pilots.

They came on board, clad in the armor which had so astounded the cruiser commander, and with the stunned, broken look of men who still cannot understand their defeat. They were of the same racial type as Fran and the biological assistant at Columbia. The sailors of the ship stripped off their armor and enviously watched chosen men don it.

And then the cruiser headed for New York harbor at full speed, while her electricians worked feverishly.

SHE WAS seen approaching, a good many hours later. Smoke pouring from her funnels, white water hissing at her bows, she came steaming in the Narrows with a vengeful confidence. One great bombing plane had been gotten aloft from Governor's Island. It circled, and dived—and such a storm of anti-aircraft fire poured upon it that it reeled drunkenly and went dizzily down with smoke pouring from it.

Then there were monstrous detonations on shore. The forts at the Narrows were firing point-blank. But the guns were not designed for such short-range work, and their desperate, improvised gun crews did not know their work. The guns fired, at most, two shots apiece. Not one was a hit. The

cruiser disdainfully refused to return such fire. She swept on.

Up the East River. She came to a stop opposite the great power house, and small boats dropped from her sides. There were at least two men in each, in the scaly armor of the Invaders, but in addition each boat carried contrivances built by the ship's electricians. They were very simple—merely battery-driven induction coils and spark-gap contrivances. Flexible wires ran from each of these devices to each man of each landing party. They were clumsy. They were very cumbersome. But machine-gun fire spat out from the small landing boats when rifles opened from the shore. Nearer, one man stood up in each boat and threw grenades. The rifle fire from shore died, and scale-armored figures fled.

The boats moored. Compact groups of zestful fighters swept into action, though hampered by the need to keep close to the generators of high-frequency current. They, though, were fighting men, whose leaders had not the habit of carrying whips nor the policy of breaking spirits.

To the cracking of rifles, they went into the power house. Tumultuous rifle fire and the explosion of grenades kept up for perhaps two minutes. From the ship, now, other boats put off. Not to reinforce the landing party, but racing to the navy yard. Their crews, also, landed. Carrying their portable generators, they vanished into other naval ships.

Then a strange quiet descended. The two cities were utterly still and utterly silent. The ships of the harbor were grounded or sunk or still drifted helplessly with the tides. The streets were empty of all save stiffened, grotesquely posed bodies. Not even rats scurried about the sewers. Not even insects flew.

The only sign of life anywhere was one light cruiser of the United States navy, with smoke pouring from her fun-

nels, her screw turning just enough to hold her opposite the power house. The power house itself trickled smoke from one of its mighty stacks only. From within it, at long intervals, came perhaps one shot, or two, or perhaps a flurry of three or four.

Then, simultaneously, smoke came from the balance of the giant stacks of the power house. At first thin and white, it thickened and became dense. Then smoke arose from the funnels of the frozen, immobile ships tied up at the navy yard. Electricians were working in the inward of those ships, while other men got up steam—being careful not to break free from flexible wires which ran to each man of them.

ABRUPTLY, one of those moored warships emitted an exultant bellow from its whistle. Figures stirred upon its decks. Some of them stared incredulously at the stillness of which they had been a part until a few short seconds before. A second vessel boomed triumphantly, and signal flags fluttered from its masts.

And then figures in scaly armor came out of the power house—but the armor was bloodstained, and gob hats still served as headgear—and began to wig-wag to the belligerent cruiser.

With startling suddenness, there were noises in the cities also. Bells clanked, whistles shrilled and voices babbled everywhere. The cities were alive again. Because, with trained men to work, and the problem outlined before, the great arc in the power house had been reconstituted just as soon as the landing party could clear the generator room and get up steam in the extra boilers below.

That was not all that had to be done, of course. There was more—much more. Commandeered trucks, hastily fitted with dynamo and a gasoline engine apiece, trundled across the bridges with men in second-hand scaly armor on each one. Those men wore the hats of

sailors or the uniform caps of marines, and they were heavily and very efficiently armed.

They whooped derisively at each other, and at certain bewildered civilians who could not understand that they had just been revived for the second time by the arc in the great power house.

Those trucks separated and drove at full speed for other power stations; some uptown and others in New Jersey. They would build up arcs in each station after zestfully demolishing any of the Invaders who protested. They would then instruct local electricians briefly and go on to repeat the process farther away.

In six hours every city as far away as Philadelphia would be again its normal self. In twelve—with police and national guard units taking over the task and spreading the revival process in geometric progression—Washington would come back to life. In twenty-four, even Niagara Falls would again be awake and its enormous water-power output of electricity diverted from industrial use to make impossible any recurrence of plague.

But that last was a precaution. Long before that time the menace of the Invaders was over. Steve took measures to bring that about almost at once. Because, with Brooklyn awake, adequately armed parties from the ships at the navy yard had turned up at the power house. Steve asked for them.

They came in a highly professional manner, with strict discipline and their commissioned officers in command. But they marched through the streets and saw some of the things that had come of the Invaders' hold upon the city. They knew, too, how many cities had been subject to the sudden, horrible paralysis of all, save machinery, and the results of that machinery running on unguided. More, they knew of the looting of the cities of women as well as of goods.

Steve had them drawn up before the helix in the courtyard, with its flickering bluish flame. He had refused to allow the current to be turned off from that helix. He had found from a position facing its open end that the blue flames seemed to coalesce and fill the whole center of it. And the pictures on those flames—which elsewhere were fragmentary—combined together so that he looked directly into the world which was the Other Side of Here.

HE SAW, then, a scene very nearly normal: green fields, clouds, sky, and sunlight; a long distance away, the forbidding towers of some sort of stronghold; between that stronghold and the opening of the helix there was a city of sorts. Its streets were narrow and its houses mean. But the stronghold was vast and strong. And there was fighting going on in that city. Men battled with swords and spears, and other men fought savagely with weapons which were noiseless and unfamiliar. It was a quaintly alien city, yet there were motor trucks of utterly familiar mold, and men using them as fighting machines to charge other men.

But the fighting was less, now. It seemed rather the cleaning-up process after street fighting, when individuals and groups of the defeated party made their last stands as they were hunted down.

Steve had watched for a long time. And when there were many grim, armed men drawn up before him he told them, very briefly, all that he knew about the Invaders and their world. He told them that the helix was the entry way to that world. And he asked for volunteers to join him in seizing a foothold there, for the avenging of the Invasion and to recover the loot and especially the women who had been taken for the pleasure of the Leaders of that alien race.

A sound like a roar answered the call for volunteers. But, as extra ammuni-

tion was being served out, machine guns allotted, and swift and decisive preparations made, in that other world men advanced directly toward the mouth of the helix. There were six of them, and not one was unwounded. Fran Dutt strode ahead. He walked up to the helix, and into it, and came out of it into the courtyard of the power house. He faced Steve grimly.

"Steve," he said, unsmiling, "we've had our revolution. Thanks to you, perhaps. We've got this city—the one you see—and we'll get the others. I'm speaking for the Revolutionary Committee."

"We've had," said Steve dryly, "a few doings in this world, too."

"I know," said Fran. "It scared our Leaders and made our job easier. Now—you're getting ready to return the Invasion. I'm here to make terms. There's no use fighting. What's happened wasn't our fault, not the fault of we Underones. It's the fault of our Leaders. We've started the job of kicking them out, and we'll finish it. Let's make terms."

Steve said quietly: "You've been in our world enough to know I can't assume authority to make terms, Fran. But if your terms are fair, I'll urge them."

Fran drew a deep breath.

"For peace, we offer to return all that's been looted or pay for it in gold. We've plenty of that. We'll pay as well as we can for the damage done to your cities. We offer the return of all prisoners, of course. And we offer to finish kicking out our Leaders and then hold a plebiscite on asking for annexation to your country."

Steve stared.

"We ask," said Fran, "no punishment for Underones who did damage while obeying the orders of Leaders. You can have the Leaders to hang, if you like. We don't want them! And

we ask for colonists. We've only half a million human beings in our world, and it's as big as yours. We need colonists to teach we Underones many things—but especially to hate our Leaders as such men would be hated in your world. We need them, and we'll give them land and welcome them, and we'll learn never to cringe to any other living man——”

He stopped, his eyes aflame. The five men behind him nodded. One meditatively tightened a bandage about his arm. Blood was oozing from it. All five nodded again.

“Fran,” said Steve soberly, “those terms are all we could ask. But—for guarantees——”

“March your men through!” said Fran Dutt fiercely. “We ask nothing better! They'll encourage waverers to believe in freedom, anyhow! And you tell them, Steve, to grin if they see any one look scared or angry, and everything will be all right.”

There was a conference. So complete and bloodless a victory seemed almost suspicious to the naval officers. One of them began to stipulate the number of men and arms who could go through to Fran's world.

“Damn it!” cried Fran, “I'm asking you to go through! My people went mad and fought to-day. But to-morrow they might be frightened and cringe before what Leaders survive, through pure habit. I'm begging you to come through, so my people will have the courage to stay free forever! We've been slaves too long!”

IN TEN MINUTES there was the steady tramping of men marching into the helix which was the entrance to the Other Side of Here. From one side they could be seen to march into it—

and vanish. But from the end they could be seen in that other world.

Fran turned suddenly to Steve.

“One question,” he said harshly. “Lucy?”

“She's all right,” said Steve. “She's on the cruiser. She's going to marry me to-morrow.”

Fran had been pale. He went paler yet.

“I thought so. Well—you're decent, in your way. I'll go back to my world. It's a pretty good world, and it's going to be better. And this Invasion won't turn out to be such a bad thing for your world or mine.” He started for the helix. He stopped. “Lucy knows I love her,” he said evenly. “Her father's been sent for. He'll be here in an hour or so. Wish her happiness for me. And I mean it!”

He did manage to smile. He walked into the helix with half a company of sailors. He vanished.

“And now, Nick,” said Steve with a faint smile, “to get back to normal!”

It did not take long. Full realization of the benefits that would come from the doubling—later to be the multiplication by a much larger number than two—or the space available for use by the human race did not come for many years. But the affairs of the world went back to normal in a surprisingly short time.

In fact, only the next day the wedding of Steve Waldron and Lucy Blair was interrupted by a conscientious bureau of health official who insisted that there was a warrant for the arrest of Steve which had never been quashed and so had to be served. It seemed that Steve was required to be arrested for having violated the order of quarantine, forbidding any person to come out of the plague-stricken city of Newark.

THE END

The EXPEDITION from KYTLM

by M. F. James

BEGINNING on July 17, 1947, occurred a series of disasters and catastrophes for which no plausible explanation has yet been offered.

The trouble began when a gigantic planet, fully the size of our Sun, appeared close to our solar system.

Where this intruder had come from, and how and why are as much a mystery now as then. The body shifted its position in a manner which was a direct violation of celestial mechanics.

From this body a number of dark, impenetrable shapes emerged and hovered about the Sun, causing cataclysmic weather disturbances on the Earth. The shapes appeared near Mercury next. This planet was blotted from view for several weeks, causing great concern and fear to every one.

Next the shapes were discovered about Venus. They held that position for three months, during which time the planet was lost to sight.

Then they approached the Earth. A terrible fear of the unknown caused widespread panic and rioting among all the peoples of the world. The vast black shapes hovered in the ether on all sides of our planet.

Then the terrible disasters began.

A great volume of the Atlantic Ocean was seen to rise bodily out into space, the work of some tremendous unknown force. This disturbance of the natural balance of the planet resulted in great tidal waves and earthquakes all over the globe. Millions perished, and whole islands sunk beneath the violent waves.

Then a school of whales sighted near the Antarctic Ocean by a whaling vessel were observed rising into the air and out into space at incredible speed.

Human beings began to disappear in the same terrifying manner. Hundreds of thousands of Negroes, Egyptians, Arabs and white men from Africa were the first to be taken. Then the cities of Shanghai, Kyoto, Canton and Hong-kong were completely removed from Earth in a few minutes.

The world was in a frenzy of fear. No one could offer any reasonable explanation for these happenings. Was it war? Was some alien planet endeavoring to destroy the Earth? Was it a natural, or unnatural phenomenon? No one knows.

PERHAPS the greatest catastrophe of all was the burning of New York.

A vast indistinguishable object or mass descended over the city on a hot spring day in 1948.

Before any of the millions of people within its confines were aware of what was about to befall them, the Sun's rays, tremendously concentrated by the thing in space, shriveled the city to charred destruction. Every one of its twelve million citizens was reduced to a tiny heap of ash.

Such an act of wanton barbaric fury surely could not have been the work of intelligent beings from out of interstellar space.

The only explanation possible was that

the Sun underwent a sudden, violent change in its atomic structure.

The loss of several of our finest ocean liners followed. No trace of them has ever been found.

The last phenomenon, or deliberate act, was the complete disappearance of the planet Mars. In its place is a strange new sphere, of unknown composition. What brought about this change will forever remain a mystery.

Since that period of horror in 1947-48, no other like series of events has occurred. Scientists are still vainly attempting to discover the cause of the catastrophes.

The best explanation would seem to be that some unthinkable force in the universe ran riot for a brief but destructive period, upsetting the scheme of things. There are many weaknesses to this theory, but until a better one is advanced, it must stand.

Let us hope that such a thing will never again disturb our sphere.

PART II.

(A copy of the official report of the activities of the First Inter-Universal Expedition from Kytlm, under command of Zustrll Karustl.)

Subject: Investigations of the third planet of the miniature solar system now designated as Emsda A 10.

Upon arriving in the vicinity of solar system Emsda A 10, we immediately began preparations to examine the more promising looking planetoids we observed.

The central Sun of this system is a rather brilliant little star. Its size is about the size of our ether ship. We have made accurate estimates of both its size and weight. These computations, together with the other mathematical research records, may be found in the special report prepared by our head mathematician, Liomx Moktl.

The fairly high temperature of this Sun was due, we discovered, to a continual disintegration of its atoms. We procured samples of the material of this star for future study.

A careful scrutiny of its miniature planets was begun in an effort to determine if life of any sort exists on them.

The planet nearest the Sun was so tiny that we failed to see it until we trained a radiation magnifier on the point designated as its position by our mathematical-astronomy experts.

A subsequent examination of this planet under a magnifier of considerable power failed to reveal any signs of life.

The second little planet was hidden by a film of haze. We found a rudimentary bacterial form of life here, but nothing of particular interest.

The third planet, however, was well worth a more extensive examination.

This body, about the size and shape of a marmintberry, was almost completely covered by a compound which we analyzed to be H_2O , containing perceptible traces of sodium chloride.

Many forms of bacterial life were found in this liquid. Some were of considerable size for their type. In fact the largest of all bacteria we found on this tiny body exists in the thin green liquid. We have about a hundred specimens of this life form, which we are preserving for future study.

About a quarter of the area of the planet is composed of a dark-brown substance somewhat akin to the inorganic-organic soil of our own planet. It is upon this soil that bacterial life has reached its greatest development.

Here is an interesting point: the soil areas are of various sizes, and separated from each other by the liquid compound. Upon each portion of soil we found a quite different type of bacteria.

On a large mass located in the equatorial belt of the planet, we found the bacteria to be almost entirely black in color. A few colonies of brown and



Perhaps the greatest catastrophe of all was the burning of New York. Every one of its twelve million citizens was reduced to a tiny heap of ash.

occasional specimens of white were also found.

On one, the largest of all the soil areas, we found vast colonies of yellowish tinged bacteria. These are, by far, the most prolific of all types. We have taken several colonies of a few million organisms each, which will be turned over to the department of bacteriology for study.

There are also a large number of white-colored types. These are either more highly organized or developed than the other types, for they have far better colonies.

A WORD about these colonies.

An average of about a million organisms form the largest. The bacteria are constructing artificial hives or nests containing a great number of tiny cells or compartments in which they live.

The most interesting of all colonies is the one located on the edge of the second-largest body of liquid. The towers and pinnacles of the structures of this colony rise to a surprising height compared with the size of their builders. In this particular colony we have measured structures of this sort which were fully two hundred times the height of the inhabitants.

By the way, a most unfortunate accident occurred to this same colony, due to our own carelessness.

One of our bacteriologists was examining the spot through a plane-focused radiation magnifier. He held the instrument fairly close to the globe in order to get the maximum illumination. The light rays from the little Sun were accidentally concentrated onto the colony while the expert was engrossed in his notes. As a result virtually all the organisms were destroyed and most of

the artificial cellular structures charred to ruins.

This was most unfortunate, as we had counted on procuring the entire colony in an effort to determine whether it would thrive on our own planet.

We had the good fortune to notice several large, rectangular objects floating on the surface of the liquid. A sort of thin vapor was emerging from the vents on their upper surfaces. At first we believed them to be another form of life. However, subsequent examination revealed that they were in reality floating colonies of bacteria.

We have two specimens of this interesting type for further study, floating in a small tank.

WE CONCLUDED our investigations of Esmda A 10 with a brief survey of several other tiny planets, one of which we have taken from its orbit and replaced with an artificial sphere of the same size and shape, so as not to upset the delicate balance of the system, since we may desire to further study this tiny solar system. We shall do some interesting experiments on the planet we removed, the fourth from the miniature Sun.

In conclusion, I would like to mention a remark made by Fstiltm Stromkt.

He suggested that the bacterial life form of the third planet might be the equivalent of human beings on that tiny world. He even carried this idea so far as to declare that they might have a definite civilization of their own, which we, being aliens, fail to understand.

These are interesting conjectures, but, of course, not to be taken seriously.

Bacterial beings! Obviously a ridiculous theory.

Signed,
ZUSTRL KARUSTL.

4th-Dimensional Possibilities

A scientific discussion

by Harry D. Parker, A.S.M.E., S.O.A.E., etc.

HOW MANY READERS of fourth-dimensional stories have ever looked up the subject in a standard work of reference? Funk & Wagnall's "New Standard Dictionary," single volume edition of 1928 states:

Dimension: 1. Any measurable extent or magnitude, as of a line, surface or solid. . . . 3. Physics: Any quantity, as length, time, or mass. Fourth dimension of space: A supposed or assumed dimension whose relation to the recognized dimensions, length, breadth and thickness, is analogous to that born by any one of these to the other two.

Four-dimensional space may be regarded as a hypothetical conception to explain equations containing four variables in analytical geometry or as an entity beyond the limitations of ordinary existence. The treatment of the fourth and higher dimensions belongs to the geometry of hyperspace or dimensional geometry. The conception has been used by some investigators to explain certain superphysical phenomena which seems otherwise inexplicable.

Obviously to recognize a dimension one must at least see, feel or think it. Sight is a form of perception. It is an extension of our consciousness beyond the limits of touch or taste that is more susceptible of analysis than smell or hearing.

In the usual concept of dimensions length, breadth, thickness (line, surface, solid) two well-known illustrations are

offered to bring the fourth within our mental grasp.

1. Lines and right angles. Start with a line, add another to it at right angles. To measure the result you have not the original *length*—we are, of course, considering geometric straight lines—but a two-dimensional thing having length plus breadth. Again add a line at right angles to the other two and you have converted the two-dimensional into a three-dimensional. Now try to add another line at right angles to the other three. If you succeed, you have created a fourth-dimensional something. Thus the tesseract no more truly represents a fourth-dimensional object than do atomic models represent actual atoms.

2. Cross sections. This is much simpler than Method 1. It rests on the mentally acceptable fact that the cross section of anything will have, at the point of the section, the next lower dimension. Cut open any solid and the line of the cut will be a plane. Cut across any plane and the cross section is a line. Cut a line and the cross section is a non-existent point, or 0 dimension.

From all this it is obvious by analogy that all three-dimensional things (solids) must now be cross sections of four-dimensional somethings.

This is where sight comes in; for if all solids are fourth-dimensional cross sec-

tions, then we can now see all about us slices of fourth-dimensional objects.

Carrying this thought along brings the idea that a one-dimensional dweller needs no eyes, for single directional perception certainly does not require sight.

And it is equally to be considered that a fourth-dimensional dweller would require three eyes to focus. (This seems to check O. K., for we three-dimensional dwellers have two normal eyes).

How about the conception that three eyes are necessary to perceive fourth-dimensional matter. We ourselves can see fourth-dimensional cross sections with two eyes. (A one-eyed person loses all sense of *perspective*, *i. e.*, sees in terms of planes.) In fact, we can, in a way, see the fourth-dimension solids—if the fourth dimension is *duration*—by using our own third eye—that mind's eye which is so often dormant. (Let's go into this duration business a little later).

WE ARE altogether too prone to consider a dimension as entirely a matter of substance. As far as that goes, just what is the *first* dimension? We are taught that it is length. A geometric point moved to generate a line. But the fact that the length exists long enough to be perceived adds duration. It might be then that the first dimension is existence at all. It certainly requires time—duration. If that is the first dimension, how about the other three?

And if we think far along that line we come to wondering where to fit the spatial next dimension—that right angle to all planes of a cube. Perhaps that is the fifth dimension.

Now if duration is a dimension, which for this illustration we will call the fourth, then to travel in the fourth dimension means to travel in time; *i. e.*, to travel in time means reaching various points of duration.

If time is analogous to a stream flowing at a specific rate, and we are limited

to that speed, how can we hope to travel in time? The answer lies in the concept that time, as well as space, is *curved*, and by taking a short cut we could, within limitations, theoretically journey in duration. Our path would be along the cords to the time arcs.

Thus we would not need to go faster than the rate of our own time flow; simply progress along a shorter track in either direction, to future, or past, duration.

Speaking of speed, or velocity, the speed of light is not the limiting factor that it is assumed to be. This any one can demonstrate for himself—for thought is faster than light.

Think of Mars, or any distant planet or star, and, mentally, you are *there*, in a time quantity of a fraction of a second. Can the speed of thought be measured in terms of intergalactic distance?

Returning again to this matter of duration—time. We three dimensional (?) people only see time in cross sections—another indication that it may be the next dimension—an instant at a time, in a steady series of progressive slices. A fourth-dimensional dweller would see *all* time up to his own present. If this idea is correct, what dimensional vision is required to see the future projection of duration also? Perhaps this is a fifth-dimensional function.

Suppose we could *see* duration. Any of the three familiar dimensions can become either of the other two by either a change in the object's or the viewer's position. Inversion by rotation. Does this hold true of time—duration?

Shadows are projections of dimensions in either the same, or the lower dimensions. A three-dimensional object casts a two-dimensional shadow (cross section again), but a two-dimensional object may cast either a two- or an O-dimensional shadow by being rotated in relation to the point of light, and a one-dimensional thing can cast

either a one-or an O-dimensional shadow—again by rotation.

Why does not a three-dimensional object behave as do the other two? Obviously because we cannot rotate it readily in the next *spatial* dimension.

If we could see duration as a whole and not in slices (instant to instant) and duration plus our familiar three makes four, the sight of the fourth-dimensional objects would be beyond our understanding, because of the seeming confusion and our own two-eyed inability to interpret what we perceived.

For more than one solid *can* occupy the same space—if separated by the fourth dimension (if we consider time—duration—to rank as the fourth in the series). A moment's reflection shows that the past duration of, say, a solid, has had existence ever since it became a solid, and that this same past duration still exists, since the solid under consideration is still in existence. Again, where is this past duration, and what if we could see it?

AS AN EXERCISE in original thinking try to vision some simple object as it is, plus as—and where—it always has been since it was created. Try to see the thing all at once, not as a series of pictures.

Then let your mind toy with the conception of an entire universe.

In doing this it won't take very long for you to realize that the duration dimension of anything often extends beyond the horizon from a given point, or vanishes into the Earth, or extends into the heavens. It may return within the viewpoint of the observer, once or many times. Upon such a return it would not necessarily be identifiable as part of the original—now existing—object.

All this is approximately counterpart to a long wall, for example, entirely inclosing, let us say, a great forest in our

own three-dimensional existence. Coming up to and seeing such a wall for the first time an observer could not know whether the wall surrounded the forest and returned to the starting point, or simply extended in each direction beyond his view, until he had followed its entire circumference.

Again, if dimensions are time—duration—and “Any measurable extent or magnitude,” then electricity, gravity, surface tension, space, etc., all become dimensions, for they have extent and magnitude.

Ordinary pictures are two-dimensional representations of three-dimensional views. In a way they are akin to shadows. It takes training to see a picture. Three-dimensional views may be, in like case, the next lower representation of four-dimensional things which we are not trained to see; or rather which we see only as cross sections at the time instant of the moment.

And if all three-dimensional objects are duration cross sections of the next dimension, then *we* must be ourselves cross sections of something else. Is our faint contact with our extradimensional projection the thing we call “Conscience”? Or is that inborn certainty found even in the most primitive that we have a soul—only a stumbling knowledge of that other, vaster and more complex self of which we are cross sections—just as our mirror in its turn shows a two-dimensional reflection of our three-dimensional bodies?

So comes the wondering if when we die we cease in all dimensions, or only in our own instant of duration.

Perhaps, as a plane rotated through the third dimension throws an O-dimension shadow, we ourselves cease our three-dimensional existence at the instant that our fourth-dimensional self is rotated through the fifth, and higher dimensions.

INFRA-UNIVERSE

Beginning a thought-stirring two-part novel

JIM WENTWORTH lifted the old-fashioned knocker, let it drop with a resounding thud. Then he waited, leaning against the newel post that framed the door, and mopped his brow. It was hot, as only a Maine summer day can be, and he had trudged the last weary miles from the railroad station. If he failed in this quest—he grinned wryly—he'd have to walk all the way back to New York. A well-worn silver dime rattled lonesomely in his pocket.

It took a long time for some one to answer. Jim looked about him. The house was as lonesome as his dime; a long, one-story, rambling structure set by itself at the edge of the pine wilderness, with a half mile of dirt road interposing itself between civilization in the form of a concrete highway and its own exclusiveness. A queer place for the laboratory of a scientist like Matthew Draper, Jim reflected; but then Draper had always been known to be somewhat eccentric.

There was no stir of movement, however; and the windows were thick-shuttered. He slammed the knocker again, impatiently. The late-afternoon sun swept over the broad fields like a gleaming sword, illuminated the upper windows of the Harbor House, a mile away. Jim had passed it on his hike; a fashionable summer resort where the wealthy idled and flirted desperately to avoid boredom. He grimaced. It was dinner hour. Over there they would be sitting down to a host of courses, perfectly prepared, impeccably served, while he hadn't eaten more than a sandwich since noon. A sudden fear assailed him.

Suppose it had been a hoax; suppose Matthew Draper was not——

The door creaked, opened slightly. A girl peered warily through the crack. "What do you want?" she demanded. There was a quaver in her voice, a certain desperation.

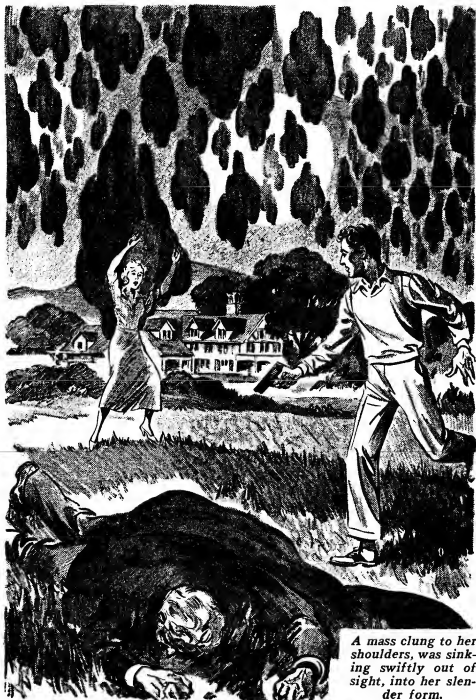
Jim Wentworth had been trained to detect such things. He wondered, bent forward slightly to make out her features. But the shadows baffled him. Aloud he said: "I came all the way from New York to see Professor Draper. He advertised for a scientific assistant. I fill the bill, and—I need the job." He grinned ingratiatingly, trying to lure the girl out into the sun where he could see if her face lived up to the strange sense of strain in her voice. She refused to be lured. Instead, the thin opening narrowed even more.

"The position is—uh—filled," she declared. "I'm sorry. You had better go. There's a train from Sauk Corners at 7:10." She tried to shut the door, but Jim was too quick for her. His foot shot out, wedged itself into the crack.

"No, you don't," he said firmly. "I didn't spend my last nest egg on a trip to this neck of the woods for nothing. The station agent at Sauk Corners told me I was the only one to inquire the way here to-day. And"—his eye swept the rutted country road—"they'd have to ask to find this God-forsaken place." His sinewy fingers gripped the door edge. "You see, I used to know Professor Draper. I studied under him at Tech some years ago. So I'd rather get it direct from him."

"Oh-h-h!" the girl quavered, thrusting her slight body against the door to

by NAT SCHACHNER



A mass clung to her shoulders, was sinking swiftly out of sight, into her slender form.

hold it from intrusion. Then urgency crept into her voice. "Please go away, Mr.—uh—"

"Wentworth! Jim Wentworth!" he told her cheerfully.

"Please go away," she repeated. "I can't explain, but it's important." She fumbled a moment; then a small, slim hand thrust out into the glare of the sun. "Here's money—for your fare, your trouble. I'm sorry."

Jim stared down at the proffered bills. The hand that held them was trembling. He shook his head, refused to withdraw his foot. "No can do," he submitted. "You're too anxious. I thought there was something wrong when I read the ad. Matthew Draper doesn't have to advertise for assistants. There are thousands of bright young physicists—and old ones, too—that'd give anything to work under him. Now, I've *got* to see him."

The girl tried vainly to close the door. "Please believe me," she implored. "You must go away—at once. Don't you see—it's for your own sake I'm doing this. I—" She bit her lip, stopped—as if she had said too much.

"You interest me strangely," Jim murmured, and shoved suddenly.

The girl fell back with a startled little cry; the door swung open. Jim stepped into a long, raftered reception room, glanced swiftly around. There seemed nothing wrong. It was comfortably fitted with easy-chairs, reading lamps; tables littered with the latest scientific magazines, and scatter rugs.

Open bookshelves lined the walls, crammed with an impressive array of technical volumes. Among them were a goodly number authored by Draper himself. "The Higher Mathematics of Space" was one; "An Inquiry into the Gravitational Warp" was another. Jim knew them all, knew of his old instructor's preoccupation with the abstruse properties of space.

EVERYTHING seemed normal, perfectly proper. Except, perhaps, that the windows were tight-shuttered, and the lamps that illumined the room glowed with an eerie tinge of violet, as if that end of the spectrum were being favored against the normal yellows.

He took a deep breath. He had braced himself against something—he knew not quite what. Then he remembered the girl. He swung on her. She faced him, fists tiny, quivering balls at her sides. Her face was pale, her eyes wide but steady. She was evidently under a terrific inner strain. Jim made a mental note to study that face more thoroughly—later, when he had more leisure. He was certain the study would be rewarding—and pleasant. But just now—

She came closer, taut, desperate. Her voice was a whisper, as if she did not wish to be overheard. "For the last time," she begged, "will you go—now, before it may be too late! Trust me; don't ask for reasons."

Her urgency, her obvious sincerity, shook his resolution. Before he had seen her full face, he had suspected foul play. Now, that was impossible. But there was mystery here—more! The girl was quite evidently scared. He couldn't leave her alone. And where was Draper?

He grinned tightly. "Sorry, miss," he answered slowly. "I trust you—that's why I'm staying. If you won't tell me what's wrong, Draper will."

"I am Draper," some one said calmly. "What can I tell you?"

The girl stiffened, moved quickly to the nearest table, pretended to be arranging the magazines. Over her shoulder she cast Jim an appealing glance. He understood, swung about to face the man who had quietly entered the room from the left. Through the open door Jim could see a tremendous laboratory, filling an entire wing of the structure. Machinery hummed and glowed, and

the pungent smell of ozone flooded the reception room. Then the man had closed the door behind him.

"If you are the Professor Matthew Draper I used to know at Tech—" Jim started. "But of course you are. I'm Jim Wentworth; took several courses with you back in 1926. Have knocked about a bit since; ran a railroad through an African jungle, got blown up in a rocket-fuel experiment, helped stage a revolution in China against the Japs, did some research under Bentley in California." He went on soberly, "Poor Bentley died; there was a depression; the colleges spewed forth thousands of keen young graduates willing to work for nothing; and I'm on my uppers. I saw your ad—I still remember your space-dynamic theory—and I came."

There was a perceptible, embarrassing pause. Keen, gray eyes seemed to pierce Jim through and through, to penetrate into the innermost recesses of his soul. The girl shifted uneasily at her pretended work.

Then, finally, the man said: "Ah, yes, of course. Wentworth! I remember you now. A brilliant student, one of the few who could really understand my theory. Glad to see you again." But his hand did not go out; and his eyes probed more keenly than ever.

JIM steeled himself with an effort. There *was* something wrong. He recognized Draper, of course. A little older, a little more gray at the temples, but that was due to the lapse of years. There was no mistaking the well-set, muscular frame, a little above the average height, the firm jaw, the bushy, overhanging eyebrows, the quick, piercing gaze.

But Jim had an odd feeling of discomfort. His old professor had hesitated in recognizing him—and it was a sincere hiatus, too, as if he had to call into play an outside memory, a memory

that was not exactly indigenous to him. Draper had been famous for his phenomenal, instantaneous memory. He had been known to stop a total stranger in the street, demand of him whether or not he had on such and such a day, years before, been in Boston, walking on such and such a street at a specified hour. And been exactly right, too, though the startled accosted one had lost all recollection.

There were other things as well. The voice, for example. Draper's, all right, but with a queer intonation, a certain foreign preciseness, as if Draper were making a conscious effort to speak in a fashion that had once been easy and natural for him, but was no longer. In all his bearing, his manner, there was that sense of subtle duality, of alienness, of a deliberate willing to be what should have required no strain at all.

Jim held his features blank and composed, to betray to that searching scrutiny no trace of his inner unease. After all, he was thinking insane thoughts. Before him, without the shadow of a doubt, stood Professor Matthew Draper famous physicist, and propounder of startlingly novel theories on space.

"You'll do," said Draper suddenly. "Miss Gray will show you your room. You can wash, arrange things. We eat in half an hour. Then we'll get to work at once." A strange intensity crept into his voice. "There's no time to be lost. I must hurry. Every moment is precious."

With a little laugh he recovered himself, said more easily. "But let's not talk shop until we enter the lab. In the meantime let me introduce Claire Gray, my very faithful secretary. Been with me for years. Remained even when my assistants quit. I commend her to you for loyalty—uh—Jim." Then he was gone, back through the door to the left.

The girl stared at the new assistant with frightened eyes. Her finger crept to her lip, for silence. "This way, Mr.

Wentworth," she said aloud in prim, businesslike tones. He followed her, toward the right, into the other wing of the sprawling building. No words passed until they came to the room at the farther end.

It was simple, but adequate: a four-poster bed, a lowboy, several straight-backed chairs, a washstand. Jim dropped his battered bag on the floor, looked at the girl quizzically.

She had shut the door tight, backed against it with pressing hands. Her face was pale, her voice a panting whisper. "There is still time to go, Jim Wentworth," she said breathlessly. "Before dinner. There's an exit through this wing. He won't see you. If you hurry, you can catch the 7:10 at Sauk Corners." Her fright was deadfally sincere.

"Why should I go, Claire Gray?" Jim demanded gravely. "I need the job, and Draper's the best man in the world to work under."

"You fool!" she cried desperately. "Are you blind? Didn't you see with your own eyes? You knew Matthew Draper back in Tech. Why do you think his assistants left him last week, secretly, at night? Ran away, that's what they did, swearing they wouldn't stay in this place another minute. And they'd been with him almost as long as I have."

"You didn't go," Jim pointed out, evading the questions. He wanted time to think, to piece out the puzzle himself. He was almost afraid of what the girl might say next.

"I?" She stammered and flushed. "I—I couldn't. They begged me to go with them." She raised her head suddenly. "Professor Draper's been like a father to me—my own parents are dead—and I couldn't leave him—in this condition. But you—you're not bound. Didn't you see? Didn't you notice? Hasn't he changed since Tech?"

"We all change with the course of years," Jim again evaded.

"Not that way," she declared. "And the change was sudden, instantaneous. Three weeks ago, in fact. He—he's a different man."

"He looks the same."

"It isn't that," she whispered. "The shell is Draper, the Matthew Draper we all knew. But inside there's something else, something alien, foreign. Something that peeps out at me inquiringly, scares me. I can't quite explain it. It's as if Matthew Draper had been submerged, and an alien entity had taken possession of his body."

"That's impossible," Jim said loudly. He was arguing against his own instincts as well as with the girl. "Rubbish! Nonsense! He remembered me. I'll bet if I asked him about little incidents at Tech he'd remember them, too."

"Of course," retorted Claire. "That's what makes it all the more frightening. But he'll remember them with an effort, willing himself to remember, as if he were doing so through an alien medium—a personality not his own. Broderick and Hanson noticed that at once—in the laboratory. There was an incomplete experiment. Oh, he finished it all right, but unenthusiastically, groping his way. And the solution was a queer one, along lines radically different from the way it had started.

"Then he threw everything aside, all the work that had absorbed him before the—the change. He started a new experiment with feverish haste, ordered materials by the carload, worked night and day, drove them with a dreadful intensity, as if every second counted—almost as if——"

"It was queer, they told me—that experiment, the machines he was building. Something not quite of this world; something outside all our concepts. They didn't understand what they were doing, and he refused to explain. You

remember the old Draper—how clear, how lucid his explanations were.”

Jim nodded.

THE GIRL went on, with a rush of words. “The experiment scared them. So did Draper. There were times when he did not think they were looking, and his features relaxed, as if he had been keeping a pose for their benefit. I—I’ve had that experience, too.” She shivered. “It’s dreadful—that look—a peep into a strange universe, at something not—not human! They couldn’t stand it any more, and they went. They said this experiment might lead to God knew what consequences, and they wanted to be far away when it happened. That’s why you must go, too—now.”

“You’re staying,” Jim said very gently.

“I—I told you why,” she declared defiantly.

“Then so will I.”

“O-oh!” There was a perceptible pause. Then, “I didn’t tell you everything,” she said quietly. “Three weeks ago a man came here. He appeared to be a farmer—the average type—wind-tanned, face coarse-stubbed, rough-handed. But there was a certain intensity in his eyes. He demanded to see Professor Draper. I tried to ask him his business, but he pushed past me, into the lab. I heard a click, as if the door had locked. Then Draper’s voice, surprised, inquiring—and silence. I was alone in the place. It was Betsy’s day off, and Broderick and Hanson were at Sauk Corners, awaiting a shipment of supplies.”

Her eyes held a far-off look. “I became afraid of the continued silence,” she proceeded. “I knocked on the door. No answer. I knocked louder. There seemed a strange, slithering movement, as of something crawling, inching its way along the floor. I must have screamed. I know I started for the telephone, to get help. Then the door flung

open, and the farmer came out. Behind him stood Draper.

“But even in the flood of my relief, I noticed at once the strange difference in them both. The intensity was gone from the intruder’s eyes; he seemed bewildered, staggering. He looked around the room as if he had never seen it before, as if he didn’t know how he came to be here. He muttered thickly, and fled out of the door. He was scared. And Matthew Draper—well—he was as you’ve just seen him—something alien, distinct. There was a triumphant look to him that was quickly veiled when he saw me. He stared at me—strangely; it seemed to me he was trying to place me, to *remember* me. Then he went back to the lab, shut the door. I never dared question him since. But”—and now Jim had to strain to hear her whispered words—“when I entered the lab a little later I saw something. A slimy trail across the floor, as though something damp and snail-like had crawled there.”

She stopped. Jim’s scalp prickled. Then he laughed. “You’ve let your imagination run away with you, Claire Gray. You’ve built up for yourself a horrible picture out of the flimsiest materials. The farmer had merely come with a message; perhaps he was a little drunk. Certainly Draper has a right to halt a line of experiments and start a new one. That may explain his change, his seeming preoccupation. He’s hot on the trail of something. Such intensity of absorption changes a man, makes him absent-minded, causes memory to be something of an effort. He’ll be himself as soon as he finishes.”

He talked confidently, trying to convince himself as well as the girl. And failed in both instances. She looked at him quietly a moment, said in matter-of-fact tones, “The dining room is just off the entrance hall, on this side. Dinner will be served in fifteen minutes.” Then she was gone.

THE MEAL passed without incident. There was only Draper, the girl and himself. The housekeeper, a fat, comfortable-looking native of the neighborhood, served with wholesome Maine heartiness, if not with effortless efficiency.

Matthew Draper did not seem disposed to talk much. He ate hurriedly, gulping his food, as if anxious to be done. Jim, alert for little things, noticed that he held his knife and fork a bit awkwardly, as if not quite accustomed to their use. The girl kept her eyes intent on her plate. She looked pale, weary. She did not speak.

Jim was forced to keep the conversational ball rolling. He did it with deliberate skill. He interspersed a casual flow of talk with even more casual references to Tech, little incidents of years before.

Every one of them was answered properly—by Draper. This in itself was strange. In ordinary talk a good many allusions to the past are permitted to drop without further remark. Not so here. To Jim it seemed as if, behind the hurried mask of his old professor, there was a desperate alertness, a wariness, an eagerness to allay suspicion. Yet always there was that gap, that pause, that obvious willing himself into the memory of the incidents. And always that strange impatience to be through, as though every moment were a precious part of eternity that was needlessly slipping through his fingers.

It was with audible relief that Draper pushed his chair back to announce the end of the meal. "That's that, Jim," he declared. "Sorry to rush you so, but we'll have to work a bit in the laboratory. I've got to finish what I'm doing as soon as possible. I must hurry. Hurry!" He seemed to forget their presence. "They can't wait much longer." He was speaking to himself.

Claire flashed the new assistant a startled glance, looked away again. But

Jim said cheerfully, "That's O. K. with me. I don't mind working nights."

The scientist jerked his head up. There was gratitude in his eyes. "Thanks!" he muttered. "Those fools, Broderick and Hanson, left me in a lurch, brought everything to the verge of ruin. But then, how could they know what they did?"

JIM had never seen quite such an array of apparatus in a private laboratory before. There were dynamos for the generation of current, Diesel engines, huge electronic tubes, cloud chambers for the study of disrupted atom tracks, electrostatic globes, great bar magnets, a high-temperature electric furnace for refractory metals, a mass spectrograph, an interferometer, and a profusion of other instruments, some of which Jim, for all his training, did not recognize. It took his breath away.

"Good Lord!" he said involuntarily. "They represent a fortune. I didn't know——" He stopped in embarrassment.

Draper smiled queerly. "You didn't know I was that wealthy, eh, Jim? I'm not. But the name of Matthew Draper is rather well-known, and my credit is good." He chuckled and added, "Especially when no one firm shipped more than a small part of the whole."

That startled Jim; then he forgot the strangeness of the statement in wonder at the apparatus that held the place of honor in the very center of the lab. Whereas every other available inch of space was crowded with instruments, the central portion was scrupulously bare except for this.

A huge, hollow cylinder of gleaming crystal rested solidly on a metallic base. It appeared some eight feet high and five feet in diameter, sufficient, thought Jim incongruously, to house a man comfortably. Fine metallic wire, spaced an inch apart, ran spirally around the trans-

parent circumference, darted upward toward the roof of the lab, pierced through; and, at the bottom, embedded itself in the base of the metal block.

Enringing the cylinder were machines of intricate design. Jim had never seen their like before. Giant metallic mouths, their orifices swirling in queer, distorted curves, making a wavy pattern of gaping wideness toward the central transparency. Like prehistoric monsters, ready to spew forth flaming vibrations at the word of command.

"Good heavens!" Jim ejaculated. "What are those?"

Draper avoided his gaze. "Oh, they!" he muttered vaguely. "Part of the experiment. But come," he added quickly; "we have no time to lose. Must get to work. Please hook up those tubes in series with the cloud chamber. It's already prepared. Use soft X rays, helium, and argon. Shoot them through to get a constant stream of electrons. You know the technique, of course?"

Jim nodded, asked dryly, "For what purpose?"

"Set up your magnets to deflect the stream," Draper went on, unheeding. "That is, I want you to see what happens; take pictures. Hurry, please!"

Jim Wentworth stiffened, was going to retort angrily. This was not the leisurely, meticulous attitude of the Draper of old, the careful explanation of details, of ultimate purposes. Obviously, the scientist was reluctant to disclose what he was about, was laboring himself under a terrific urgency. Jim could see it in every move he made, in the feverish rush from instrument to instrument.

Then Jim relaxed, grinned. Very well, if old Draper wanted him merely as a technician, let it go. But to himself he determined to keep his eyes open, senses alert. He'd solve before long both the mystery of the machines and of Draper himself.

THE ELECTRONS broke off from the parent atoms, hurtled across the cloud chamber, made bright lines through the fog molecules, were deflected by the magnets. Everything was normal, usual. He so reported to Draper.

The scientist jerked erect from the ring of metal monsters, groaned. He was suddenly gray and haggard. "More time lost," he mumbled. "I've got to get back, before it's too late. Try again," he screeched suddenly at Jim. "Step up the current to fifty thousand amperes; pass it first through the *Agrav* —" He pointed to the first of the queerly shaped enringing machines. "But be careful not to get in front of the orifice."

"What did you call it?" demanded Jim.

"Oh!" Draper seemed confused. "Just a name I gave it. Now hurry, hurry!"

But when, at three in the morning, the cloud chamber sizzled with streaking electrons, the picture was still normal, just as it should have been. Reluctantly, Draper called a halt; grim, despairing. He said good night with a feeble attempt at cordiality, saw Jim out of the laboratory, then closed and locked the door.

The young man was drunk with fatigue. Nevertheless, he stood outside the door, listening. He heard movements within, apparatus being shifted. Draper was continuing on his own. Evidently he did not intend to sleep. Puzzled, Jim went slowly to his room. So preoccupied was he with his thoughts that he almost jumped at the wraithlike figure that loomed up at him in the dark, in front of his door.

"I simply had to see you again," said a girl's voice. It was Claire. Without a word, Jim opened his door, switched on the light, closed it behind the girl. She was paler even than before. She

had not slept. "Yes?" he said inquiringly.

"Did you—did you find out what he was doing?" she demanded hurriedly.

For the moment he was angry. What the devil did she mean by pumping him? If Draper wanted his experiment held a secret, it was not her business. Good Lord! Was she a spy for some rival, interested in what Draper was up to? Were there commercial possibilities in whatever it was? Then he grinned. She was too desperately sincere to be that.

"Not a thing," he declared cheerfully. "The old fellow wouldn't talk. And what I did was routine stuff."

She nodded. "Just as I thought. The others said the same. But those horrible machines. They give me the creeps." She gripped his arm suddenly. There was amazing strength in her slim fingers. "And Draper himself. I'm afraid—call it a woman's foolish intuition, if you will—but I'm afraid that something is going to happen soon that will mean disaster to us all—to you, to me, to the whole world, perhaps."

"Nonsense!" He placed his hand on her shoulder gently. She was not the hysterical type, but she was trembling. "It's been lonely here, and you've been brooding a lot of little things, magnifying them." He laughed shortly. "If it'll comfort you, I have a very efficient little automatic in my pocket. I always carry it."

"Guns won't help," she retorted. "But—good night."

FOR A WEEK nothing happened—that is, on the surface. Claire said nothing more to the new assistant of her strange fears. Meals were served on time; Betsy, the housekeeper, waddled back and forth, keeping up a good-natured, interminable stream of meaningless conversation. The atmosphere of the place did not seem to affect her in

the slightest. But then, nothing external ever ruffles your true down-Easter.

All day, and most of each night, Jim was in the laboratory. His work branched out. He made new alloys in the electric furnace, of materials furnished by Draper. There were curious, unusual combinations. Some of the products, to Jim's eye, possessed qualities that would mean millions commercially.

But Draper, seemingly, was not interested in that phase of it. He threw them into the discard impatiently, tried new fusions. He was searching for something definite. But invariably, four times a day, Draper would hand him samples of materials that had been breathed forth from the maw of the metal enringing monsters he had named *Agravs*, for disruption in the cloud chambers. And each time, as Jim, with growing puzzlement, reported nothing untoward in the reactions, new lines etched themselves into the scientist's haggard countenance.

He seemingly never slept. Long after Jim was reluctantly released from duty, in the early hours of the morning, he could hear the whine of the motors in the laboratory. Once he caught a new note; a sibilant, hissing noise, muted by the intervening barriers. Like the hiss of an angry snake. But it held inflections, curious seesaw intonations, as if it were a coherent language of sorts.

A strange reluctance withheld Jim from flinging open the door and discovering the source of the sound. He went to bed, troubled, grim of face. His sleep was disturbed. He tossed in a welter of strange dreams, in which Matthew Draper appeared in Proteuslike transformations.

As the second week grew and waned, a curious bond arose between the scientist and his assistant. The initial sense of distrust gradually wore off. It could hardly have been called liking, or affec-

tion; on both sides there was a realization of alienness. But there was a certain respect, an awareness of each other's attainments. Jim did his work doggedly, efficiently, unobtrusively giving valuable suggestions.

Still Draper did not take him into his confidence, or disclose the secret of the *Agravs*. Nor did Jim attempt any underhanded spying, though his brain worked furiously all day in the attempt to solve the mystery. For he was well aware by now, and Draper knew that he was aware, that some alien entity was inhabiting the body of his old professor, and possessing, besides the brilliance and knowledge of the savant, an additional fund of incredible extent. Knowledge that had not hitherto existed on Earth, that in the main did not seem to fit Earth conditions.

It was this that evidently delayed Draper, or the thing that appeared to be Draper. The correlation and the transference of a body of outside fundamentals to the laws and materials that governed Earth. Jim was able to help here, and Draper appeared duly grateful.

IT HAD early been forced upon Jim that the experiment had something to do with the properties of space—in fact, an attempt to modify those properties in some unknown fashion. Which was but natural, considering that Draper had been the foremost authority in the world on space and gravitational influences.

A dim light flickered in Jim's brain at that. Could it have been possible that this entity or personality which was now Draper had deliberately penetrated, in some unknown manner, into the form of the scientist in order to avail itself of that authoritative knowledge and perspicacity? Was it, in fact, that rough farmer intruder of whom Claire had spoken? If so, what had happened to Draper? How account for Draper's

complete knowledge of his past, of his former associations? What was the purpose of this experiment? Why the dreadful haste? He was obviously racing against some contingent tragic dénouement. What was it? Would it involve Draper only, or Jim and Claire as well, or the entire world, as the girl intuitively feared? Questions that troubled Jim through the tossing hours of supposed sleep, and during the furious energy of the lab.

Claire and Jim made it a nightly practice to compare notes in the privacy of the right wing, before going to sleep. Another bond was springing up between them—unawares—but very much of this Earth. Jim no longer scoffed at her intuitions. He, also, was afraid, now. Not for himself, nor, for that matter, of the thing that was Draper. "Whatever he is," he told the girl, "he means us no personal harm. Nor the world, either. His is a tremendous brain, far beyond that even of the old Draper. It frightens me; it's so—*un-Earthly*. That's the only word I can use to describe it."

"Do you think," whispered Claire, "he might be a being from Mars, or Venus, who somehow managed to span the gulf and fused himself into Draper's body? Perhaps he's now trying to find a way to get back—the door by which he came had somehow closed in the interim."

Woman's intuition, sixth sense, whatever it may be called! But even she, with all her swift imaginings, could not encompass the entire, incredible truth, the utter incomprehensibility of Draper!

Jim laughed a bit at that. He was too practical, too much of the engineer, to go off into such wild fantasies. "The chances are," he declared, "the explanation, when it comes, will be much simpler, and more within the bounds of reason. What it will be, I don't pretend to know. We can only wait and see."

They did not have to wait long. The dénouement came with stunning, un-

believable force. On the Monday of the third week Jim was staring aghast at the cloud chamber, scene of familiar daily routine. Something new had happened, so novel that he could only stare and rub his eyes in wonderment.

The familiar electron tracks no longer bent to the influence of the magnets. Instead, the bright sparkles flashed straight and undeviating across the fog, unheeding of the magnetic pull, to a point almost midway between the plates. Then something else happened. *The tracks stopped dead!* It was not merely that they collided with some interior substance—that would have been evidenced by a scattering of light, or a sharp-angled divergence of the path; they literally disappeared, vanished! The electrons had ceased to exist!

Jim frowned, glanced surreptitiously back at Draper. The scientist was busy with the adjustments of the spectrograph in the rear; he had not seen the untoward phenomenon.

Jim's brain raced feverishly. Wherein had this particular emission of electrons differed from all the other batches? For one thing, the current had been stepped up another notch; and, for the first time, had passed through the interior maws of the strange *Agrav* machines in a certain complicated crisscross of alternations, whose pattern he had tried to puzzle out mathematically in the privacy of his own room the night before, when Draper had first suggested it.

The mathematics had been incredible; he had been certain there were errors in his calculations, and had fallen into bed too tired to check his figures. Now, it struck him with blinding realization, perhaps he had been right. There had been exponentials of the *tenth* order in the resultant equations. *Ten dimensions*, when the universe of known things was limited, even in the relativity equations, to *four!*

HE CHECKED HIMSELF firmly. He had a simple observational fact to report. That the electron emissions had not bent to magnetic stresses, and that they had disappeared at a given point. Never mind the theories. That would come later. As a loyal assistant, it was his duty to report at once.

But still he hesitated. There was no doubt in his mind that this was the phenomenon for which Draper had been waiting so feverishly. *What, then, would happen next?* Would he, Jim Wentworth, be the unwitting means of releasing some unknown, horrible doom upon them all? Matter had not yielded to normal, this-universe influences. It had vanished, suddenly, completely, dropped into some hole of which he had no present knowledge. What would it mean if this experiment could be universalized? What did Matthew Draper—or the being who seemed Draper—intend to do with this weapon?

He took a deep breath, walked steadily over to the still-bending scientist. "I think I have the result you've been looking for," he stated quietly.

Draper whirled. Flame sprang into his eyes, and died. "Meaning——"

Jim explained rapidly, went over the procedure from beginning to end. Then he exhibited the photographic plates to substantiate his eyewitness account. "I've checked for every other possibility," he concluded, "and eliminated them. There's only one conclusion to be drawn. You have managed to divest electrons, at least, from the ordinary attributes of matter. More, you have annihilated matter without any corresponding manifestations of energy. It's a great discovery, one that will set the scientific world on its collective ear."

But Matthew Draper was paying no attention. His face was a stony mask, his body a graven image. But out of his eyes peeped a fierce, unhuman exultation, a flame that seared and burned.

"Thank you, Jim Wentworth," he said slowly. "You possess brains beyond most of your kind, and you have been—loyal, asking no questions, even when you suspected. I shall remember that. Now I ask you to leave me; there is much I must do alone. I shall expect you back at four in the afternoon. Not earlier, not later."

Before Jim knew quite what had happened, he was out in the reception room, and the strong lock to the laboratory had clicked irrevocably behind him.

Claire looked up from her work, startled. She had been answering polite, dunning notes, all of the same tenor: No doubt Professor Matthew Draper had overlooked, in the pressure of his work, their little bill for apparatus and supplies of the instant. Would he favor them with a remittance at his earliest convenience?

The bills ran to staggering totals. To each Claire sent an identical answer—that Professor Draper was away for a week; that on his return he would, without fail, forward the necessary check.

She rose quickly, anxious, overwrought. "What has happened?" she exclaimed, with an apprehensive look at the locked laboratory.

Jim grinned tiredly. "Nothing much, except that I've found for Draper whatever it was he was looking for." And for the second time that crucial morning he explained. "There is no doubt," he finished, "that the man we knew as Draper harbors an another-world entity. He let it slip out of the bag when he thanked me for—er—well, never mind. But he classed all of us together as *your kind*, thereby differentiating himself from the rest of humanity. Now the question is—what is he up to?"

Claire clung suddenly to him. "I'm afraid," she whispered. "Poor Draper, who had been a father to me—is dead. That which is walking around in his shape is the murderer, an alien being. God knows what else he is planning."

She moved away suddenly, confused. "Perhaps we'd better get help—the State police—before he does something terrible."

Jim shook his head decisively. "No, that won't do. Whoever he is, I'm sure he doesn't intend to do any harm. Perhaps you were right, though, in the beginning. He was trying to find a way to get back to wherever he came from. Mars, Venus, perhaps. He's discovered it. It wouldn't be right for us to stop him."

"But the Matthew Draper that was!" Claire exclaimed desperately. "What about him?"

Jim frowned, grew grim. "I've thought of that," he admitted. "We must do something to restore him to his former status, if it's at all possible. But a lot of blundering police wouldn't help; they'd only make matters worse. Leave it to me."

THE HOURS dragged on leaden feet. At lunch Draper did not show up. The eastern wing of the house vibrated with the pounding of heavy machines, with the whine of the dynamos. The acrid taint of ozone permeated the entire structure. Evidently Draper was building up tremendous power. The meal passed in silence.

When Betsy cleared away the last dishes, she announced that she was going to Sauk Corners. The professor had told her to take the rest of the day off. "And if you ask me," she added significantly, "I don't know as I'll be comin' back. I kinda didn't care for the way the pefessor looked when he sneaked over to the kitchen to tell me. He 'peared a bit—well—teched in the head. I'd advise you to clear out, too, dearie," she addressed Claire. "This ain't no place for decent folk." And she flounced out.

Claire and Jim exchanged glances. "I—I think old Betsy is right," the girl said breathlessly. "There's still a

chance, Jim. Let's get to the Harbor House. It's only a mile or so. There's a State trooper always on the grounds."

"No," Jim repeated grimly. "But you ought to go with Betsy," he added. "She'll drive you to the hotel. You need the day off, too. You can play golf, idle luxuriously, dance. Stay overnight. I'll pick you up in the morning."

"Jim Wentworth," she declared quietly, "you're trying to get rid of me. You're getting a bit afraid, also. It's no go. Either we leave together, or I'm seeing it through with you." And that was that.

At four o'clock Jim took a deep breath, looked quizzically at Claire, went quietly to the laboratory door, and flung it open. The girl followed him with firm tread.

The great interior was a hive of humming activity. Every dynamo, every motor, was whirring at full speed. A strange violet light bathed every nook and cranny. The galvanometers registered an incredible half a million amperes, voltmeters oscillated at the incredible figure of fifteen million volts. Power surged in almost visible waves through the laboratory. But what held them taut and speechless was the sight of Matthew Draper.

He stood within the crystal cylinder! He seemed taller than before; his eyes were burning coals of frenzied eagerness. His body quivered with impatience. He seemed like a whippet restrained on the leash, tense for the moment of release. Earth characteristics had dropped away from him. Matthew Draper, Earth scientist, was wholly submerged by—what?

Around the shimmering cylinder stood the ring of *Agraus*; long, squat, metallic monsters, their strangely curved mouths gaping and pointing directly at him. Huge cables snaked across the floor, connecting power machines, great electronic tubes, and *Agraus*, in intricate pattern. A gigantic knife switch

had been cut into the circuit on a panel directly outside the enringing *Agraus*.

Draper turned at the sound of their entry. The fierce, unrestrained light in his eyes died, gave way to more human emotion. Almost, Jim thought he detected a certain sadness, a certain regret in that piercing gaze. But he must have been mistaken, for the flame leaped back again, more glittering than before.

He gestured to them. Involuntarily, Jim's hand closed tight in his trousers pocket on the flat automatic. It was fully loaded, and a cartridge belt hung snug around his waist under his khaki shirt. He had come prepared for all eventualities.

"YOU ARE PROMPT, Jim Wentworth, as usual," said Draper. He expressed no surprise at his secretary's presence. His voice penetrated the cylinder walls without distortion. Jim had often wondered at the composition of the transparent substance, but Draper had not explained, and there were no other samples of it he could have used for analysis. It was not glass, nor quartz. At the most, Jim had determined that its crystalline structure was arranged in polarized planes, parallel to the axes of the *Agraus*.

"At exactly ten minutes after four," Draper continued, "you are to close that switch." He pointed to the newly installed panel. "By exactly fifteen minutes after four, you are to be out of the house. You'll find my car on the driveway. The motor is going. The tank is full of gas. Get away without an instant's delay, and don't stop until you reach the Harbor House. And don't come back! That is imperative. My instructions must be followed minutely; the slightest deviation may mean disaster. And—you will find an envelope addressed to each of you at the Harbor House. You will both find yourselves amply rewarded for your work. That is all."

Claire gave a little gasp. Her hand went out blindly to the man at her side for protection. Jim's lips tightened; he took a half step forward. "Now listen to me, Matthew Draper, or whoever you are," he rasped. "This farce has gone on long enough. I have, as you say, been extraordinarily patient; but it is time now for the show-down."

The scientist within the shimmering cylinder stiffened. A palpable wave of force seemed to lash out from his flaming eyes. Then he swerved to the electric clock on the wall. Its hands pointed to two minutes after four. "Have your say," he replied calmly. "You have eight minutes time. Not a second more."

"I have this to say," Jim retorted grimly. "You are not Matthew Draper; you are some strange being, entity—God knows what—that took violent residence in his body. I demand answers to the following questions: Who, in Heaven's name, are you? Where have you come from, and for what purpose? What have you done with Matthew Draper? What forces are involved in the manipulations of these monstrous *Agraus*? And what will happen when I pull the switch?"

"Softly," answered Draper with a tinge of mockery. "I would not have time to answer all your questions, even if I wished. But I do not wish. It is enough that you have guessed a dim part of the truth. I am not Matthew Draper. What I am, does not matter. You would not, could not possibly believe the real truth."

"I know the truth," Claire cried out. "You are a Martian, or a Venusian—a being of some other planet."

Draper smiled queerly. "I am not of your Earth; that much is true," he admitted. "But I cannot tell you more. The knowledge would make you mad, it would sound so utterly incredible to your limited intelligences. Enough that I have been here; am now returning.

Earth will know me no more." His voice took on steely determination. "Nor any more of my fellows, if what I propose is successful. And that, my Earth friends, you will discover to be of infinite advantage to you, though it is impossible for me to explain.

"Nor shall I explain the workings of the *Agraus*. You, Jim Wentworth, would have sufficient intelligence to reconstruct them. You, or others of your race, might foolishly try to follow into my world, in spite of all warnings. Such a course would prove disastrous to you, and possibly to us as well."

"I've discovered this much," said Jim. "The cloud chamber experiments gave me the clue. Their emanations do things to space, and to matter. The ordinary laws no longer apply. Magnetism, light, heat, yes, perhaps even gravitation, have no influence. And the matter vanishes—where to, I have not been able to determine. Perhaps into a fourth dimension."

"You have discovered more than you should," said Draper, biting his lip. "Though the full, incredible truth is beyond your imagination. Perhaps I should destroy you before I leave; it might be wiser."

CLAIRE cried out; Jim's finger tightened on the trigger of his concealed automatic.

"But it is not necessary," continued Draper. "For, at four thirty, this building, and all it contains, will be thoroughly destroyed. I have seen to that. The place is mined with explosives, and a clockwork mechanism will set it off. That is why I gave you warning to leave immediately after you have performed your appointed task."

Jim compressed his lips. "That is just what I won't do," he declared, "unless you return Matthew Draper to us, alive and unharmed."

Draper's brow darkened. "It is impossible," he said angrily. "I am a part

of him and he is a part of me. My continued life depends on this community of intra-position. It is unfortunate, but he must accompany me to my destination. Now hurry," he added hastily, his eye flicking to the wall clock. "In another minute, exactly, the switch must be pulled."

Jim settled back comfortably on his heels. "Release Draper then," he insisted.

"I told you it is impossible," the immured scientist cried out in exasperation. "I've trusted you, Jim Wentworth. A clockwork mechanism to activate the switch might have gone astray; you, I thought, would not fail. You must believe me. It means disaster to a mighty race, to your universe as well, if you don't obey."

"Release Draper," Jim repeated stubbornly.

The clock ticked on. Ten seconds to go. "Fool!" shouted the man in the cylinder in an awful voice. "Do it now, or it will be too late."

Claire pulled at Jim's arm. "Quick! Obey him! He's really sincere. Something terrible will happen."

Jim shook his head. "He's bluffing; that's all."

Five seconds of ten after four!

Draper literally cowered. His face was a dreadful mask of anguish. "Claire Gray," he said thickly, "believe me! Your fate, the fate of all the universes, depend on knifing the switch. Quick!"

Her eyes widened on him. "I believe you," she screamed suddenly, and darted for the panel.

Jim whirled, shouted savagely. "He's bluffing, I tell you. Don't touch it!"

"He's not," she panted. Her fingers reached up, pulled desperately down. The second hand clicked into the last position.

Jim grunted an oath, sprinted. If that switch made contact, his trump card would be gone. They would never see Draper again. What reason had they

to believe that the entity in the cylinder was telling the truth? Perhaps the transparent material was a shield of force, to protect him from what was going to happen. How did they know that they would not unwittingly bring disaster to an unknowing world? Given time, he'd force the truth out of the man in the cylinder.

In his mad, forward rush, he collided with the snout of one of the *Agravs*. It pivoted around on a turntable, oscillated back and forth with the jarring vibration. Jim had no time to think of that. His sinewy hand jerked forward, caught at Claire's wrist. Too late! The blades made contact with an irrevocable click.

The violet flame deepened. Great sparks flared and sputtered over the copper flanges. It would be suicide to try and grasp the handle now. There was a humming noise that grew quickly into a full-throated roar.

Claire sobbed, "I shouldn't have done it, Jim!"

The roar grew louder. The building rocked with vibration. And high above it the half-outcry, half-piercing hiss, of Matthew Draper. Jim whirled. The cylinder was aglow in the violet bath. The spiral casing of wire flared a fiery red. The man himself was a gleaming torch of radiance. But his finger pointed desperately to the solitary *Agrav* which Jim had knocked askew.

It was oscillating on its pivoted base in a wide arc. Palpable vibrations, waves of violent cracklings, issued from its twisted mouth, steeped everything in its path in the strange, torchlike radiance. Apparatus, walls, hazed and became transparent. Beyond their confinement, the outer fields appeared; sky, road, the distant Harbor House. Then they, too, hazed and shimmered with violent transparency.

Then Claire's cry came to him, faint, far-off. He swung around again. She, also, was a flaring, misting waviness.

Her features blurred, mouth still open with the faintness of her cry.

Too late, Jim realized what he had done. With a groan he sprang for the wide-swinging *Agrav*. Or rather, tried to spring. For the curved maw, in its oscillation, bore directly upon him. The crackling waves spattered over him, past him. Something happened. A curious sense of lightness, of floating on air. His limbs seemed independent of his shrieking will. The universe seemed to flatten out, to roll away from him like a lifting curtain from a stage.

The laboratory receded into nothingness; so did Claire, the *Agravis* themselves. Only illimitable violet radiance remained. He was dropping—no, that was not the sensation, for that involved a feeling of weight, of gravitational tug. He was being released from the trammels of space, was emerging from its confines, was leaving it far behind.

The enveloping light roared and sang. It grew to unbearable intensity. There was a vast, soundless explosion, as if the universe itself had burst asunder. And with it, the individual who once had been Jim Wentworth seemed to burst into a thousand million sundering shards!

II.

JIM WENTWORTH looked about him dazedly. His senses were still scattered, his mind not functioning efficiently. He seemed to be sitting at an angle, as if somehow he had landed on a mountainside. He struggled, half conscious, to his feet, and slipped. He tried to hold himself, couldn't. Down the smooth, steep floor of the laboratory he slithered, until, with a crash, he brought up, breathless and bruised, at the solid wood of the wall.

Warily he arose again, tried to get his bearings. The wall sagged away from him at a steep angle. It was but a semi-shell. Loose apparatus huddled in a

smashed heap at its base. It extended its full length, but the inclosing sides were cut off abruptly.

Slowly, he turned, looked up at the place from which he had just tumbled. He caught his breath. The tilted floor of the lab was cut off as abruptly as the sides of an arc convex to himself. Beyond was—nothingness. Or rather, a faint cerise glow that extended interminably, seemingly to infinity itself. Nothing moved in that circumscribed expanse; no Sun, no Moon, no stars. no clouds.

He was thoroughly awake now. The *Agravis* had been in that upper part, so had the cylinder inclosing Matthew Draper. They were gone, with the rest of the house, the Maine woods, Earth, the universe itself. Swift pain stabbed suddenly through him. *Where was Claire Gray?*

As if in answer, a low moan came to him. He swung precariously on the angled floor, saw something stir in the heaped wreckage against the wall. He skidded toward the huddled girl, lifted her in his arms. She was alive, her eyelids fluttering. A shallow gash bled freely on her forehead. But—and he heaved a great sigh—she was alive!

He stanchd the flow with his pocket handkerchief, rubbed her limbs briskly. He had no water. She opened her eyes, stared bewilderedly around. "What happened? Where are we?"

"I can answer the first question easily enough," he told her grimly. "Draper was right. My fool rush to stop you jerked one of his confounded *Agravis* around. We got the same dose that was meant only for himself, within the guarding walls of the cylinder. But just where we are is another matter." He pointed upward at the illimitable cerise. "There's one answer, and 'it looks senseless. The other must be on the other side of this wall." His face tightened. "We're going out to see."

IT WAS difficult picking their way through the strewn rubbish. The door sagged crazily, and required force to swing open. The reception room was level, untouched. Nothing seemed to have happened in here. Jim stared. "That's funny," he muttered. Perhaps it was only the explosion that upended the lab—or what is left of the lab." New hope stirred. "Maybe that cerise business is only an optical illusion, and everything is as it was. Maybe—" He paused, grinned. "There's only one way to find out."

The lights still burned in the room. The windows were tight-shuttered. His hand gripped the knob of the door that led to the open. He looked at Claire, took a deep breath, flung it wide. A cry broke simultaneously from both. It was a cry of gladness.

The peaceful Maine countryside shimmered lazily before them. There was the meandering dirt road, the waving fields of grain, the several farmhouses, with the gray smoke curling slowly into the sky. In the distance, the Harbor House lifted its many windows. A man even, a normal human being, was trudging down the road toward them.

"Thank Heaven!" Claire said in a choked voice. "It was all a dream, a horrible nightmare."

But Jim's eyes narrowed against the glare of light. For one thing, it was faintly tinged with cerise—not the honest yellow-white of sunshine; for another, there was something strangely familiar in the dress, the walk, of that approaching figure. The man lifted his bowed head. Jim groaned. "I was afraid of that," he whispered.

"What?" demanded Claire. "Isn't everything all right?" Then she, too, saw the man. He was close to them now. A little cry broke from her. "Matthew Draper!"

Draper nodded wearily. His face was haggard and seamed with new lines. "Yes," he answered simply. "The old

Draper; the vanished one to whom you remained loyal in spite of everything." He passed his hand over his brow. He was trembling. "Lord! What a horrible experience!"

Jim stared, bewildered. The alienness had gone out of Draper. There was no question of his complete Earthiness. Claire sobbed joyfully. "We misjudged the other. He released you after all; went back to his own world without harming any of us in the least."

Draper shook his head sadly. "You haven't seen. Look!" He pointed upward.

Heads flung back, they saw for the first time. High above, swimming in a cerise void, three suns, gigantic, rotating rapidly on flattened axes, one a deep orange, another a canary yellow, the third a dark blue, whirled around each other in swaying, complex orbits. The sky of Earth ended abruptly not over a mile overhead, cut off sharply and cleanly from the illimitable, superimposed cerise as with a knife.

Far distant, to one side, and over the Harbor House, hung a gigantic silver globe. Its metal-seeming surface was studded with flaming sparkles of light whose hues shifted with the majestic sweep of the multicolored suns across its gleaming convex. Jim rapidly estimated its distance as a thousand Earth miles, its size somewhat half that of Earth itself.

"We've been transported to a system in some distant nebula," he said aloud. "The home of the being who took your form, Professor Draper. The entire Earth has been shifted."

Draper shook his head again. "He warned you the truth would be incredible," he said. "Look behind you, for one thing."

They turned. The ground lifted up at a steep angle, even as the laboratory floor had done. There was a knifelike ridge, then—nothingness. Or rather,

the infinite cerise of a space beyond their wildest dreams.

The Earth had been cut off sharply, in an arc convex to them. In that immense inane, far off, so far it seemed but a tiny green disk, was another globe, solitary, green-tinged, swimming in the impalpable, all-pervading glow. No suns spread their kindly rays over its surface; the dull green of its somber metal absorbed, rather than reflected, light. Claire shivered. "It's somehow sinister."

JIM turned slowly to the scientist. He was beginning to understand—and the knowledge left him shaken. "I gummied up the works. The *Agrav* I knocked out of line precipitated a segment of Earth into this nebula, universe, whatever it is, along with the entity that had taken possession of your body."

"A segment of about one hundred and twenty degree spread, with a radius of ten miles, a depth of some two miles, and an atmosphere of not over a mile," Draper confirmed. "Back on Earth, North America is being shaken by tremendous storms, due to the vacuum created; and, no doubt, later, there will be scientific expeditions to puzzle over the vast hole in northwestern Maine; and deep lamentations over the hundreds of people who were whirled with it into nothingness."

Jim said grimly. "Of course! I'd almost forgotten. There are others with us in the same boat." He waved toward the distant Harbor House, and laughed mirthlessly. "The nouveau riche, the pampered wealthy! Swell company for an incredible adventure like this! Bet they're still dancing, playing golf, not knowing what struck them. Imagine some one's astonishment, on the eighteenth hole, slicing a ball suddenly into a newly created hazard—a cerise nothingness."

"They're not so bad," Claire defended

them. "Some of them are quite nice."

Jim looked at her quickly. He was surprised at an unsuspected twinge of jealousy within him. But there were more serious, more tremendous problems at hand. "Before we go off half-cocked, we'd better take stock, get our bearings." He addressed Draper directly. "Do you know where we are?"

"Yes." An odd reluctance made the scientist hesitate. Then he made up his mind to frankness. "You might as well know. Perhaps it'll help. We're in a different universe." He held up his hand in warning at Jim's half-sceptical nod. "I don't mean merely another galaxy, like the Great Nebula of Andromeda; we're out of our space time completely."

Something tightened around Jim's heart. "You mean another dimension?" he asked.

"Worse than that," Draper retorted. "I told you the truth would be incredible. We're in a place where even the dimensions have no meaning."

"Suppose you explain." Jim grunted. Claire said nothing. She was overwhelmed.

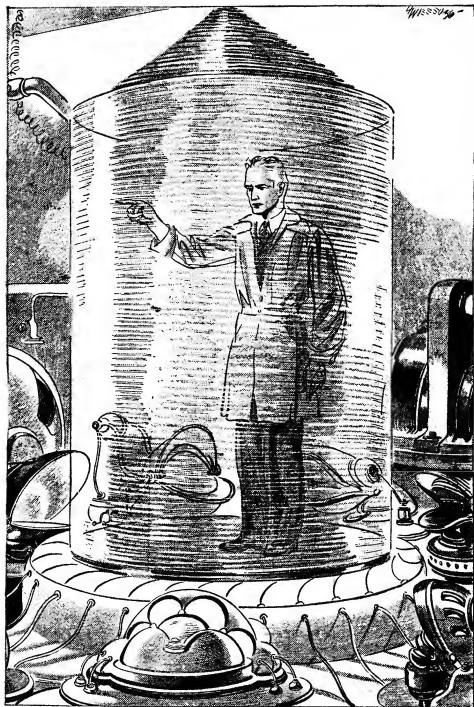
"It's rather difficult," the scientist submitted, "but I'll try. Before Einstein and relativity, our universe, space, was supposed to be infinite in extent. Journey as far as you wished, in any direction, for an infinite time, and you'd never get to the end of the universe."

"Go on," urged Jim.

"With Einstein, however, the conception changed. The size of our universe, or better still, space time, depended on the quantity of matter in the universe. Matter created space time, warped it around itself. The warp was, in itself, gravitation. But mathematical calculations proved the amount of matter to be limited. Hence space time itself is limited, warped around the universe matter in a gigantic hyper-shell, unbounded, because it is globular, but finite."



"First, I must say this: You are not Matthew Draper; you are some strange being, entity—God knows what—that took residence in his body. Why?"



"Go away, and do not come back! My directions must be followed minutely; the slightest deviation may mean disaster!"

"That much we knew," Jim said.

"YES, but few have speculated as to the obvious problems arising out of this conception. True, it was known that the universe was expanding, eating into outer nonspace time, warping it into the familiar gravitational pattern around the outrushing nebula, but hardly any one ever thought to consider the inner core; in other words, what was inside of this hypershell of space time which constituted our universe.

"Those who did, like Eddington, ducked the issue. He maintained that only the skin, or shell of the hypersphere existed—that the skin existed without any inside. But my own researches, even before this—this happened to me, had convinced me that there *was* an inside. And I am proven incontestably right by this terrific transposition of ours. We are no longer in our own universe, or any universe of the hypersphere of space time. That is a shell outside of us, inclosing us, yet as infinitely remote as if it held no existence.

"We are within the superimposed round of the familiar universe—we are the inside—in an incredible space time with completely novel properties."

"I was afraid of that," Jim said slowly. "We're on a mere sliver of Earth, sliced off by my own incredible folly, catapulted into something even more incredible than my folly, marooned for all eternity."

"It wasn't your fault," Claire cried warmly. "It was mine; for believing that—that other-universe creature who was——" She turned swiftly to Draper, awed. "Where, then, were you all that time?"

The scientist shivered. "If I live an eternity, I'll never forget the horror of it," he declared fervently. "It started with the abrupt visitation of the farmer. He *was* a farmer, but Insar had already pierced the unfathomable gulf from

here into our hypershell, contacted Earth, and interpenetrated himself into the form of that poor, unknowing fellow. For Insar, as I discovered later, is an incredible entity, a colloidal, formless mass, structureless, alike in every part—and lifeless."

"Lifeless?" echoed Claire and Jim simultaneously. "That superintelligence lifeless!"

Draper puckered his brow with frowning thought. "It's hard to understand, I admit. Even *I* find it difficult; though, when we were fused together, so to speak, I caught glimmerings from the contact of his vast mind. It seems that he and his fellows are what, in our universe, would be considered that twilight borderland between living and nonliving matter.

"They are primal compounds, an interfusion of pure matter and pure thought—the two great principles of all universes. Yet they are neither one nor the other, nor separated as we find them. There is no structure—on the one hand, into electrons, protons; on the other, into the unknown vibrations we term thought, intellect, soul, if you will. Only when such structures are furnished them may they function and *live*. At least in our universe.

"Here, where the laws of being are different, no doubt these essences of pure thought and pure matter have an uninhibited life of their own, all the more vast and splendid for the lack of restrictions of body and structure."

"That sounds," Jim interposed excitedly, "like a description, only on an infinitely vaster scale, of certain strange borderline forms that were only recently discovered on Earth. I mean the ultraviruses. They, too, have been assumed to be lifeless, unable to propagate, yet, on contact with living forms, such as bacteria or animal tissues, they display activities similar to those of life. They absorb the living tissues; they grow and reproduce their kind. They range in

size from an organic molecule in unbroken grade to the tiniest of the bacteria. Some of our most terrible diseases are caused by them."

DRAPER looked startled. "I've heard of them, vaguely. They're, of course, out of my field. But it does sound like a striking similarity." Whereupon he dismissed that angle of it, and proceeded with his personal narrative.

"As I said, Insar required an Earthly form in order to manifest an Earth life. The farmer was evidently the first material at hand. But he was rather poor material for his purposes. I gathered that Insar, for some reason, had been exiled from his own universe, had been thrust unwillingly into ours. He wanted to get back, and some dreadful urgency drove him to a furious haste. He required an Earth intelligence more advanced, an Earth body more likely to get him the apparatus and supplies he needed to build his *Agravs*, than the farmer. He found me."

Draper blushed, stammered. "I don't mean that I was such an intelligence, but—"

"Insar was quite right in his choice," Jim interposed.

"Well—anyway—I was close at hand to the travel possibilities of this Maine countryman; I had a laboratory which held a good deal of apparatus useful for his purposes; and I knew something about the particular problem he was attacking—the piercing of space and its concomitant, gravitation. I don't know exactly what happened. But when the strange intruder burst into my laboratory, and stared at me with remarkably intense eyes, I must have fallen asleep.

"When I awoke, the visitor was gone, and I was—well—some one else. A new entity interpenetrated all my being, dominated my physical movements, drained my thought processes, was

something that was not I. Yet all the while I was aware of what was going on—a potential, rather than an actual being. It was a choking, helpless sensation, such as one gets in nightmares."

He stopped, shivered again.

Jim had a swift vision of an incredible, amorphous body oozing out of the immobile farmer, inserting itself into all the interstices of Matthew Draper, becoming Matthew Draper; and he also shuddered.

"He quit your form on his return to his own universe, I suppose," he said aloud.

"Yes. I found myself suddenly walking down this road toward you."

"And the principle of the universe transposition?" Jim persisted. "Of the *Agravs* themselves? Did you get any inkling?"

"I was on the verge of it, in theory at least, before Insar came. Space is merely an attribute of matter—its clothing, so to speak. Gravitation is an attribute of the warp of space. Now suppose it were possible to dissociate the clothing from the man; in other words, matter from its warp of space. What would happen?"

Jim puckered his forehead. "Matter would cease to exist in our space time. The laws of space would no longer apply. Gravitation among them."

"Exactly. Somehow—I don't pretend to know the process—Insar was able to flatten out the space that surrounded us by means of a vibration that emanated from the *Agravs*. By so doing, he withdrew us, and all of Earth within range of the machine you set swinging, from the properties of our space time. We were, in a way, free of our universe.

"Then it was that the interior universe, hitherto circumscribed, was enabled to act upon us, draw us toward it. There is no way of telling how long we dropped through a space time that flattened always out of our path, into this new space

time. It might have been an instant; it might have been millions of years. But then, our concepts of time must perforce be discarded."

Jim started to his feet. They had been sitting on the steps that led into the house. "Other universe or not, I find Earth appetites asserting themselves with normal vehemence. I'm hungry."

"So am I," Claire piped up.

Draper smiled. "We carried with us, on this small segment of Earth and layer of atmosphere, all of Earth's properties. I must sorrowfully confess that I could eat, too."

THEY found, fortunately, that the kitchen was intact. There was ample food for at least a week. After that—Jim shrugged. He felt better now that he had eaten. New vigor stirred in him—the vigor of pioneer forbears.

"If this is to be our new world," he said buoyantly, "we had better get it organized. There must be several hundred people scattered on this sliver of Earth, wondering what it's all about. We've got a job ahead."

His eyes kindled; he proceeded with mounting enthusiasm. "Think of it; a bare hundred Earth people, marooned in a universe beyond their former imaginings, clinging precariously to a few square miles of ground. With these we must rebuild a civilization, provide food, shelter, clothing for all the generations that will spring from us, take our part in the immensity of the inner universe."

"Perhaps"—and he turned brooding eyes aloft at the rainbow-hued suns, the gleaming vastness of the silver sphere; a more somber glance at the dull-green, tremendously remote orb that seemed to cast a blight on a cerise infinity—"perhaps we may in time find a way to migrate to those other worlds, or planets, and find a larger sphere for our talents and activities."

"Captain John Smith leading the

colonists to a new world," Claire contributed gayly.

A certain grimness settled on Jim. He was staring out at the Harbor House. "And like John Smith," he growled, "for the main I'll have a pack of lily-handed gentlemen—and ladies—who never did a day's work in their lives, and will expect those who did to continue to perform for their special benefit."

"You are rather bitter against the guests of the Harbor House," Claire said wonderingly. "Why?"

"Because," he answered fiercely, "I've had to work for what I got all my life. I've tried, in my modest way, to create things, whether it was railroads, or bridges, or help some one else advance the world's stock of knowledge a bit."

"Matthew Draper has done very much more—he thrust back the boundaries, made man a bit nearer the stars." He grinned suddenly. "Or nearer Infra-Universe, as it turned out. But, over there, they have been mere parasites, living on others' labors, contributing not a whit. Well," he went on grimly, "they'll contribute here, or damn well starve."

"They're not as bad as you paint them," Claire said softly. "I know a good many of them. You forget—or rather, you don't know—that when father was alive, I, too, was a gilded lily, and stopped at the Harbor House."

He looked at her queerly. "That's all been burned out by the fires of adversity," he retorted gruffly. "You've been doing your bit."

"We're running a little ahead of the picture," the scientist interposed. "We'll be at the most a mere handful, and obviously vastly inferior to at least some of the denizens of this new universe. That is, assuming that Insar was a fair example."

"We can't even assume that," Claire objected. "He had been exiled, cast out, by his own admission. That means there

are others, more powerful, who were his enemies. Which also indicates that all is not peaceful in Infra-Universe, any more than it is in our own world."

"Exactly," Draper agreed. He shook his head gravely. "Our problems will include not only those inherent in adjusting ourselves to a new environment, but the possibility of conflict with unknown, and unknowable, forces and beings." He stared across infinity with troubled gaze. "I'm afraid we'll have to reckon with one of those spheres before long."

"Not the nearer one," protested Claire. "It's too beautiful! That must be Insar's home. It's that far-distant orb of green, solitary in the immensities as if there were a curse upon it, that sends cold shudders up and down my back every time I look at it." Wherein, as is usual with woman's intuitions, she was partly right and partly wrong. The entire truth was too complex and terrifying for hyper-universe instincts.

"Insar was racing to avert some incredible catastrophe," Draper murmured. "I wonder if he has succeeded."

"We're speculating idly," Jim declared with practical common sense, "and wasting valuable time. If we don't get started organizing this poor, exiled little sliver of Earth in a hurry, nothing else will matter very much. We'd better take stock, find out what our resources are. Come on!"

As they trudged down the rutted dirt road toward the concrete highway—fitting symbol of their strange predicament, beginning in abrupt nothingness, and terminating in the void—Jim said: "I've been wondering why, with the mass of our world reduced to infinitesimal proportions, don't we feel a difference in the gravitational tug? According to our hyper-universe laws, we should be incredibly light; the least of steps should send us soaring off the surface and out into the void."

"I've been thinking of that, also,"

Draper confessed. "The only explanation that occurs to me is that the *Agravs* tore away, along with us, an inclosing strip of space, warp and all. If our space is of a different order from that which exists in this Infra-Universe, then they wouldn't mix, in the fashion of oil and water, and the warp would remain constant, even though the residue of matter no longer possessed sufficient bending qualities. Which naturally would mean that the gravitational tug would not have varied."

THE FIRST human habitation to which they came was a farmhouse. Green fields surrounded it, ripe with the dark of potato plants, with the yellow of tall, waving corn. A sleek cow turned wondering eyes at them, swished her tail lazily at the buzzing insects, and returned to the serious business of chewing her cud. An old sow suckled a squealing brood of future hams and rashers of bacon, oblivious of fine distinctions between one universe and another. Gray smoke curled lazily from a bedraggled brick chimney. Everything was peaceful, inert, with the brooding sultriness of late summer.

"One problem seems to have solved itself—at least for the while," Jim said joyfully. "Food!"

"Why, they don't even seem to realize what has happened," Claire burst out wonderingly.

"Of course not," Draper commented. "They just fell out of one universe, and into another; earth, fields, atmosphere and all. Strange suns and silver-shining globes mean nothing to cows and pigs. You felt the shock of disruption because you were at the very edge of the change. They wouldn't."

Jim shouted, "Hello, in there!"

There was the slow stir of feet within, the scraping of chairs. A figure blotted out the door space, peered out. "Howdy, strangers!" it said in a cracked, high-

pitched voice. "Seems as if I hearn you call."

He was old and gnarled, and weath-ered by many summers and winters. His lantern jaws were still chewing vigorously. He had been disturbed from his evening meal.

"Gracious heavens!" Claire whis-pered unbelievably. "He doesn't know!"

"You all right?" Jim queried.

"Why, sure!" the farmer returned wonderingly.

"And the rest of your family? All inside and O. K.?"

The man turned in some bewilderment to the dark interior. "Maria, Amos, Sal!" he called.

There was a confusion of voices, a dull thud of movement. "What's the matter, pa?" A stout, slatternly woman in faded gingham edged him slightly away from the door, stared at the in-truders suspiciously. Two tow-headed children, bright-eyed, inquisitive, peeped out from behind their mother's skirts.

"You ain't tax collectors?" she de-manded.

"No, just checking up," Jim re-sponded cheerfully. "You haven't no-ticed anything wrong?"

"Why should we?" she snapped. There was no doubt as to who was the head of this particular family. "Ex-ceptin' for strangers who disturb us at our meal," she added meaningly.

"Sorry we had to do that, ma'am." Jim bowed gallantly. "But it was necessary. You're not in Maine any more, and life is going to be a bit dif-ferent from now on."

"Not in Maine?" husband and wife chorused. A tinge of anger crept into the woman's voice. "Ye're jokin', stranger, and I ain't keen on jokes."

"Not at all," Jim assured her gravely. "If you'll just step out into the open and look at the sky, you'll notice the difference."

They all piled out at that, and stared,

mouths agape, eyes round like saucers, at the incredible sky. The children reached up grubby fingers.

"Pretty!" said the little girl.

The boy started to howl. "Gimme!" he cried eagerly, pointing to the flashing sphere.

The woman compressed her lips with a snap. "It's a fake!" she said de-cisively, and glowered at the bringers of the news. "C'mon, Hiram; ain't got no time to be wasting on suchlike. Sup-per'll be gittin' cold."

"Yes, Maria," he answered meekly. "I'm a-comin'."

It took exhausting explanations to convince them the sky was not a show, put on by the strangers for some cryptic reason of their own; that they had been carried, willy nilly, into a strange and unknown universe.

WHEN THE THREE, who per-force had assumed leadership of the new state of affairs, had ended, and Draper had surreptitiously mopped a perspiring forehead, they were still only half con-vinced.

"Well," declared the woman re-luctantly, "mebbe it's so. But I don't see as it's much concern of our'n. We kin git along, wherever we be. Crops'll grow, and cows an' pigs'll litter." She slapped the children suddenly. "Stop gawping!" she scolded. "Ain't I told you time'n again never to gawp at people. Git inside!" She was already back inside the door. "Thankee, strangers," she called back. "But there ain't no call to go worryin' about us."

The old farmer shrugged, winked stealthily at his visitors, followed her in. The door slammed shut.

The three looked at each other. Claire suddenly doubled up with laughter. "They're just entering the most re-mendous adventure that could possibly happen to human beings," she gasped, "and all they're afraid of is their supper getting cold."

"Whew!" Jim whistled. "And I was scared stiff of frightening them out of their senses!"

"The remarkable elasticity of the human spirit, or more accurately, the remarkable resistive inertia to all shattering novelties, is nowhere better exemplified than in down-East Yankees," said Draper. "Which, under present conditions, is rather a blessing."

They passed several other farmhouses on the way. In some, the inhabitants had noticed the change-over, and been mildly interested; in others, the men were taking advantage of the inexplicable length of the day to collect their hay, to finish up daylight chores. For the fragment of Earth was stationary in the vast inane, without rotatory spin or forward revolution. The three many-hued suns gyrated interminably overhead. It would always be day.

Life went on!

THE HARBOR HOUSE hove in sight. Here, if anywhere, in this abstracted sector of Maine, there would be panic, confusion, vast wonderment.

There was! The entire population of the fashionable resort, guests, management, waiters, cooks, stableboys, were out on the widespreading, flower-decked lawns, pointing, chattering like parrots, milling inconclusively. A woman huddled in a gayly striped sun chair, crying softly. No one paid any attention to her.

The racket ceased as the three purveyors of the impossible news swung off the highway, onto the grounds. There was a concerted movement toward them. An iron-gray man, tall, eyes popping, waved his hands wildly. "For Heaven's sake, what's the meaning of all this?" he shouted.

Others pressed up eagerly. Voices rose again, hurling questions, heeding no one else. A man had teed off on the fourteenth hole. The ball had whizzed off into a sudden void of swirling light.

If he hadn't jumped backward, he would have gone, too.

Another had one moment waved a welcoming hand to a car, New York bound, filled with friends, at a point where the highway took a bend into the valley. The next moment car and road and valley were swallowed up in nothingness, and the terrified observer had raced back to the hotel, crying the catastrophic news.

The manager of the hotel, no longer suave and oilily polite, stood wringing his hands. His season, all future seasons, would be ruined if the newspapers got hold of this freakish, unheralded calamity. As for the triple sun aloft, the studded planetary orb, they had been too stunned even to venture an opinion.

Jim raised his hand authoritatively. There would be a first-class panic on his hands if he didn't quell it in its incipient stages. These were civilized people—overcivilized, in fact. Their reactions would be far different from those of the phlegmatic natives, accustomed to the unaccountable vagaries of nature, blessed with an utter lack of nerves or imagination.

"Quiet!" he shouted. "You're worse than a pack of children." They paused, looked at him with mingled indignation and amazement—and obeyed.

Jim Wentworth was stripped of all scientific meekness; once more he was the builder of railroads, the organizer of masses of men, the leader of a revolutionary command. His lean face was hard, his body tough and wiry, his voice that of one accustomed to instant obedience. There was obvious relief in the yielding of the frightened people to his will. He inspired confidence.

Claire Gray stole a surreptitious look at him; she was seeing him with new eyes; and, from the sudden sparkle in them, it was evident that Jim was not suffering in her estimation thereby.

"That's better," Jim said with easy arrogance. "But before we try to tell

you exactly what has happened to all of us, let me introduce ourselves. I'm Jim Wentworth; this is Miss Gray." Several of the more decorative young men and women waved greeting. They knew her. "And this is Professor Matthew Draper, most outstanding physicist in the world."

Draper turned red, made feeble motions of denial. They examined him with respectful interest. Newspaper accounts of his work, highly sensational, had made his name familiar even to those who read only the headlines.

Jim was playing for time, to calm their nerves against the stunning nature of their announcement. Draper's name would be sufficient guarantee that it was not some kind of a dreadful hoax.

THEY LISTENED to his short, staccato sentences. He let them down as easily as possible. He explained in the simplest of terms. They harkened, faces uplifted in the pinkish light, stealing incredulous looks from time to time at those incredible bodies in an incredible heaven. It took time to penetrate—especially the fact that they were marooned in an alien universe, never in all eternity to win back to the world of Earth and Sun and Moon and familiar stars which they had taken for granted all their lives.

When he had finished, a woman shrieked suddenly. "My babies! I'll never see them again!" She promptly went into hysterics and had to be led, sobbing and crying, into the hotel. The tragedy of endless separation spread like a pall on many faces, as realization dawned that loved ones, friends, all that they had held dear, were an infinity away.

A Wall Street broker loosened his collar with trembling fingers. "I've got to get back!" he implored. "I'll be ruined if I don't attend the opening of the market on Monday." He looked

eagerly around, wildly. "I'll give five thousand dollars to any one who gets me through to New York."

It was tragedy-comedy of a high order, but only Jim and Claire and Draper could savor it entire. The others were too wrapped up in their own predicaments to detect the touch of farce in any one else's reactions. And even to these three, the farce was mingled with the elements that brought unbidden lumps into their throats.

It was too much to ask of these people, accustomed to the shelter and security, the order of their Earthly life, that they grasp at once the nature of the astounding, impossible thing that had happened to them. They would for the most part have gone mad, if they had. They still clung with a pathetic, trustful hope to the delusion that, no matter what they were being told, somehow a way would be found for their return, for the gathering up of old threads.

For the present it was the immediacies that enlisted their fears and worries: a party in Boston to which she had looked forward for weeks; the opening of the racing season at Saratoga, which he had not missed in ten years; a business deal that meant more hundreds of thousands added to millions; a local golf tournament in which the sleek-haired young man had been runner-up the year before; a débutante dance that simply *must—must*, didn't they understand?—go through on the appointed day; school, college, sports, business—all the petty details and pursuits which mankind deludes itself into believing to be all-important, the end and aim of life.

Jim felt a rising disgust with this horde of well-dressed, aimless idlers. There was more guts, he thought, to those phlegmatic farmers who had heard of their predicament, and dismissed it as unimportant compared to the elemental facts of life. As long as their crops would grow, their cows calve,

and the pigs litter, what did anything else matter?

But even here, at Harbor House, there was poignant tragedy: that poor mother whose children had been left at camp; others like her, left irrevocably of loved ones. Tragedy—and something that descended to a lower level of human emotion. A lovely woman breathed audible relief, and turned to a dark, handsome man with impulsive gesture. *She* found no horror in the thought that her husband was infinities away. Meaningful looks passed between others. A blond, weak-looking face cleared magically. Its owner giggled hysterically. For the past week he had been screwing up his courage to return and face the music, and instead drank himself into a stupor every night. There was the matter of certain forged checks, a mulcting of a partnership, that need now no longer worry him.

And, as in every human society, certain young men and women, with the dew of freshness still upon them, had inevitably paired off, and did not care whether they were on Earth, or the Moon, or a queer Infra-Universe—as long as they were together.

THE FOLLOWING DAY—Earth time—an improvised council met in one of the more retired rooms of the hotel. Present were Jim Wentworth, elected chief by acclamation; Matthew Draper; Claire Gray; Dudley Nichols, a slight, wizened man with a nervous habit of biting his nails—he was the president of a mining company; and Ben Hinkman, a thickset farmer, as representative of the agricultural community.

Jim laid the situation before them more frankly and fully than he had to the huddled people outside. "We have got to forget, once and for all," he declared firmly, "about Earth and the universe from which we came. There is no way of ever getting back. With that in mind, it is our duty to lay per-

manent foundations for our future, and the future of those who will come after us, under the peculiar conditions by which we are inextricably bound."

He ticked them off on his fingers for emphasis. "They are, first, that our world is horribly limited. Our party of exploration proved that. We're on a mere fragment, a segment of a sphere, tapered at one end to a point, with a radius of some ten miles, and not over twenty miles across the circumscribing arc. We could only estimate the depth, but Professor Draper feels certain that there are about two or three miles, at the most, of solid earth beneath us. And the atmosphere that was luckily dragged along with us rises a little over a mile into the immensity of this alien space. In other words, we're precariously on a mere slice, a segment of a pancake, that back on Earth would not have represented a good-sized township.

"Second, the present population of our little world is two hundred and seventy-three men, women and children, who, for our purposes, can be divided into three broad groups. Group A consists of the farmers and their families, the natives of this piece of ravished soil; and I don't mind telling you"—he grinned engagingly—"that I consider them the most valuable, and the most vital for our continued existence, of any of the groups."

Ben Hinkman chuckled approvingly, cried, "Hear! Hear!"

"Group B," Jim continued, "is very much smaller—a mere forty-eight all told. I've placed in this rating the hotel management, clerks, waiters, cooks, gardeners, stablemen, chambermaids, etc. Most of them will have their uses in the new world we are fashioning, though"—and again he grinned—"the clerks, waiters and the high-and-mighty manager of the Harbor House will have to develop new functions to become an integral part of the community. But I anticipate that, after some initial mal-

adjustments, they will not be found wanting."

His face grew grave. "I come now to Group C—the largest of them all, reaching the staggering number of one hundred and eighty-six out of a total population of two hundred and seventy-three. They are the guests of the Harbor House. I am throwing in with them certain others—ourselves; the political gentleman who, in trying to persuade the Maine folk to vote him into office, was unfortunately catapulted into a universe where votes will be of little avail for a long time, I hope; and also the miscellaneous parties of tourists who were caught in the toils while following the broad highway on their way to Canada. But in the main, Group C, comprising the guests of the hotel, is rather homogeneous in character and—a problem."

DUDLEY NICHOLS chewed absent-mindedly on the finger nail of his left thumb, cleared his throat. "Hem, young man, just what do you mean by that?"

Jim said calmly: "It's plain enough. Take a look at them in the mass. Wealthy, every one of them; otherwise they couldn't have afforded Harbor House prices. Some of them work, it is true, but at what? Banking, brokerage, stock-market manipulations, insurance. Even those who head great basic industries are mere fronts, signers of checks. The real work is done by executive managers, plant superintendents, men who are too busy, or too scornful, to come to a place like this."

Nichols rose with dignity. His nervous tic left him. "Young man," he said, "I happen to be one of those—uh—fronts. I'm president of the Vulcan mining outfit. It happens, also, that I had prospected all the way from the Andes to Alaska when I was your age, grubbed with pick and shovel, and can run every damn machine in my outfit—or any outfit—if I have to."

"I don't doubt it, Mr. Nichols," Jim agreed warmly. "That's why I wanted you on this council. I simply made a generalization. I didn't mean that there weren't exceptions. But how many are there like you in that crowd?"

"Damn few," said Nichols, mollified, and sat down.

"Exactly. And unfortunately—or rather fortunately—our present situation does not call for the exercise of any talents for the stock market, or for juggling money.

"Look at the women also—highly decorative, I'll grant you—but what do they know, what skills have they, in the basic arts of life? They may play the piano, paint a little, sing a little, understand quite expertly the uses and abuses of Parisian gowns, the gentle art of spending money. But those fine arts won't help here at all.

"And the young men, who have broken the eighties in golf, possess an adequate backhand, and know Culbertson's system of forced bidding to perfection—what can we do with them? We're pioneers, faced with problems far more serious and desperate than any John Smith's pitiful crew of gentlemen adventurers were ever called upon to face in the Virginia wilderness. We've got to till the soil, dig for metals, make clothes from the too-scanty materials that will be at our disposal, build machines, run and repair them; in short—fashion a complete way of life, a civilization in microcosm. Otherwise we'll die, miserably."

"You paint a gloomy picture," Claire protested. "It is accurate enough, and quite right, up to a certain point. But you forget that not so long ago I, too, was of this lily-handed group of whom you speak so scornfully. Give them a chance. They've never had to work, but now that they have to, you'll be surprised at the skills they'll develop, the energy they'll display. Of course, there

will be wasters, some who won't fit in; but there won't be many."

"I hope you're right," Jim answered gloomily. Then he turned his attention to other points. "Granted that we make a go of it, there is still the vaster problem of the enveloping alien universe. We'll get accustomed in time to the perpetual day of three fantastic suns, to a seasonless year. But those two other spheres in outer space hold a constant threat. We have no means of defense against their inhabitants.

"If Insar was a fair sample of their kind, they are mightier far than ourselves, possessed of weapons beyond our knowledge. And they can descend at will from their own space into our circumscribed limits, whereas we can't even dream of lifting ourselves above our atmosphere. And Insar himself, though not inimical, was an exile, thrust into our universe by enemies obviously mightier even than he.

"Should those enemies decide to invade our poor little colony—well—it would be just too bad. However," he added lightly, "let's not worry about that angle until there is reason to worry. And then"—he grinned—"I suppose it will be too late. In the meantime, we'll have to perfect our organization for the new life."

They nodded approval. "Ben Hinkman, of course, will be in charge of agriculture, live stock, etc.," Jim resumed. "Dudley Nichols will start prospecting and mining operations. There should be iron in this neck of the woods. Luckily, we can work our way around the exposed flanks and even the bottom of the earth. The old gravitational laws still hold good as far as we are concerned. We seem to be a wholly self-contained system. And I'm certain that other metals will be found in the under layers."

"No doubt of it," Nichols assured him.

"Matthew Draper, of course, will be

in complete control of all scientific work," Jim continued. "And our future, if we are not to degenerate into the beast, will depend on his work. Claire Gray"—he smiled at her eager face—"suppose you take over the horde of females who infested Harbor House. See what you can do with them."

Her chin firmed. "You'll be eating those words, Jim Wentworth," she told him vehemently.

"Hope so." He grunted skeptically. "As for myself, I'll supervise building and construction. We're all set now. Let's go."

III.

FOR A MONTH of Earth time—they had agreed to keep the old measurements and divisions of time for convenience's sake—the pitiful fragment was a chaos of groaning activity. Men who had never worked in their lives were set to digging, with haphazard implements, for metals, to plowing fields, to felling trees and hacking them, somehow, into crude wagons, ax handles, wheels, pulleys, containers.

Women whose shapely white hands had been carefully masked in softening unguents, under the directing eye of Claire, and tutored by openly contemptuous farm women, now combed wool from shorn lambs; trundled old-fashioned spinning wheels; wove unsightly garments; cooked; drew water from the lake, which, aside from the wells, was their sole source of that precious fluid; cleaned; washed dishes; and milked cows.

At first all was enthusiasm, misdirected, and with much wasted effort. Then blisters came, and roughened hands, and strained, hitherto unused muscles. There were loud complaints the second week, much more dangerous mutterings, considerable malingering, and, finally, open mutiny.

Jim acted at once, and decisively. The ringleaders were warned they must

work, or starve. They refused to heed the warning. There was plenty of food as yet; the hotel had been well-stocked, and the fruit was ripe on the trees. They were certain their friends would not permit drastic action against them.

But Jim swooped down on them suddenly, with a picked number of determined, hard-fisted men he had carefully gathered around him from the farmers, the chauffeurs and stablemen, and some of the younger collegians. Kicking and protesting, men and women alike, they were shoved into creaking carts, and hauled incontinently away from the hotel grounds, while their former friends and acquaintances watched sullenly, but made no move to interfere.

They were dumped at the very edge of the little kingdom, where it had been torn loose from its mother Earth. It was a wilderness of jagged rocks and barren, exposed clay, with a steep climb over the edge to the angular bereavements on the other side.

A half dozen stout fellows were left as guards to keep them from returning to the fleshpots, great staves in their hands to enforce obedience. They were mainly the porters and handy men of the hotel, and they had old scores to settle with the recalcitrants. They would have positively welcomed a forcible attempt to break through their cordon.

"O. K.!" Jim told the outcasts cheerily, as his caravan turned to go back from the dismal encampment. "I don't believe in forced labor. You don't have to work. But you can't expect to share the community food, shelter and clothing if you don't. Good-by!"

For a whole day the mutineers held out. They stormed and pleaded; they cursed and wheedled. The guards were adamant. Hunger gnawed at them; the jagged rocks were torture to their soft flesh. Then they gave in, begged to return, promised to do their share thereafter.

They did. They were a strangely

humble lot for a long time. There were no more mutinies.

GRADUALLY order grew out of chaos. Unskilled men and women learned new skills, slowly and crudely at first, but steadily and surely. Claire in particular was proud of the progress her once-wealthy women made. She called on Jim to apologize for his withering remarks. He did it with a good grace, publicly and with much humor. They outdid themselves after that.

The crops were harvested, threshed, and carefully stored away. Seed was reserved for new plantings. There would be four crops in a year of Earth time. Day was eternal, and it was always warm. The three fantastic, gyrating suns overhead never set. It was hardest to habituate themselves to the lack of sheltering darkness, but Jim solved it by setting aside rigid periods for sleep, in quarters that were closely shaded against the light.

The cattle, the sheep, the swine, were vigilantly guarded and bred for increase. Only the excess was butchered for food. The corps of miners, under Nichols, soon uncovered a vein of iron. It was taken out laboriously with picks, crowbars and shovels, the implements of the hotel and farmhouses. The mine president set up makeshift crushers, smelters.

Charcoal at first was the only fuel available. The gasoline of the cars, of the solitary filling station on the highway, was conserved as being more precious than diamonds. So there was great rejoicing when a small vein of coal was discovered. Nichols estimated it at about five thousand tons. Not very much, but of infinite value in the present. Once the iron was smelted and worked into more adequate digging tools and machines, the work progressed more rapidly. On the under side was found copper, tin, and others of the elements.

Draper fished out of the wreckage of his laboratory much of his apparatus. Most of it could be patched up and repaired. He concentrated in the beginning, however, on chemistry rather than on physics. It would be of more immediate use. But in his spare moments he worked diligently on the fashioning of a telescope. He took the lenses from his great cameras, ground them to meet his purpose, and fitted them into a tube that Nichols had made for him.

"If we are to survive," he told Jim, "we must know more about the silver sphere and that more remote green disk."

Jim squinted upward. The strange trinity of suns had become a commonplace to them by now. But not so the flashing sphere with its ever-shifting colors. It was a beautiful sight, swinging in endless flight around the central suns. They speculated constantly on the secrets it contained; whether it was inhabited; and if so, by what manner of strange beings.

Claire insisted that it was the home of Insar and his kind. But the strange orb withheld its secrets. It swam in the cerise universe without a sign that there was life, or activity, or intelligence on its gleaming surface. Few of the little colony paid much heed to the tinier and much more remote green globe. It did not seem to move at all; day in and day out it held its position, solitary, withdrawn.

"I wonder what happened to Insar," Jim meditated aloud. He was tired, and there were far more immediate problems to be solved. "He seemed to think that the fate of this universe, and possibly of our own, depended on his swift return."

Draper shivered a little. Even at this late date any mention of the strange this-universe entity affected him like that. That period of their mutual identity, and his submergence, would remain a hideous nightmare for him to his dying day. Yet, strangely enough, he held no

rancor against Insar. The latter had acted thus from the necessities of the occasion, had carefully released him when his usefulness was at an end. He said nothing, but continued to tinker with his telescope.

TWO MONTHS had passed. Several marriages had taken place. Romance and love have a habit of flourishing under the most untoward conditions. Children played happily in the fields, on the lawns, already forgetful of their former universe. Even for the older people, Mother Earth, the universe of the hypershell, was becoming a memory. Life is tenacious.

More complex machinery was being constructed; more ambitious plans were put into effect. Hands hardened; bodies grew tough and wiry; laughter was more wholesome than it had been on Earth. Strangely enough, sickness diminished. There were ailments, it is true, but a good many diseases were wholly conspicuous by their absence. The common cold, for instance. There had not been a single case of it since their tremendous hegira.

"Queer, isn't it?" said Draper. "We've had cases of the other germ diseases."

"Colds are not caused by germs," Jim corrected. "The modern theory is that they are caused by viruses—the so-called filterable viruses that pass through the pores of the most closely meshed porcelains. It has even been suggested that they are of ultra-virus origin; those strange submicroscopic bodies that are of molecular size. Hello!" He stopped short, frowned.

"What's the matter?" Clair asked in some surprise.

"Matter enough," he answered slowly. "Remember we had about decided that there was a remarkable similarity in structure between Insar and the ultra-viruses. There's a clue somewhere in

that. There are none of them here, in this universe. Or if there are——"

HE WAS interrupted in the pursuit of his thought by a great shout. It shattered the air, whirled them around as if on pivots. Dudley Nichols was running up the path to their laboratory. His face was a gray mask of horror; his hands plucked desperately at his side. In the distance, where colonists had been working in the fields, there were more shouts, shrieks, a sudden uproar.

Jim was the first out of the door. Claire was on his heels; Draper immediately behind. "For Heaven's sake, Nichols! What's happened?"

The man ran as a drunken man runs, insanely, wabbling from side to side, clawing at himself with raking fingers. "It's got me," he shrieked. "Help! Help!" Then he fell, writhing and twisting, to the ground.

Jim raced toward him. From the hotel—headquarters for the little community—a tumult rose—screams, curses, strangled cries. A window crashed open with a distant spatter of glass. A tiny, doll-like figure of a woman poised a moment in the broken frame, writhed, and jumped headlong to the ground. There were four intervening floors.

Nichols was suddenly still. Something formless, structureless, like an enormous slug, clung viscously to his side. Even as Jim stared in horror, it seemed to ooze into the body of the motionless man, as if he were so much porous blotting paper.

"My Lord!" moaned Draper. "It's Insar, come back! This time he's got Nichols!"

"Not if I can help it," Jim said tightly. His automatic was somehow in his hand as he raced again for the fallen man. He had no clear plan of action, but he knew that this time Insar had enfolded a human being for a purpose far more dreadful than when on Earth. That is, if it was Insar.

Behind him came a terrible cry. "Jim! Help! It's got me! Help!" He lashed around with despair twisting his feet, clotting the blood in his veins. That had been Claire's anguished scream.

He saw a sight that froze the very marrow in his bones. The air was thick with great blobs of formless, viscid matter. There were hundreds of them, thousands, and the number increased every second. Claire seemed rooted to the ground, her features contorted with suffering, her eyes wide with a dreadful terror. A mass clung to her shoulders, was sinking swiftly out of sight, into her slender form. Draper sank slowly to the soil, shuddered, and lay still. Claire flung out her slender arms in mute appeal; her mouth opened, but no sound issued.

"Coming, Claire! Hold tight!" he shouted futilely, and catapulted toward her. He had flung the useless gun away; if he fired, he would kill the girl as well as the terrible entity that was taking possession of her.

But even as he reached her, she had slipped out of his grasp. The interstitial admixture was complete. The eyes that gazed malevolently, triumphantly at him, were no longer Claire's. They were the eyes of an alien being.

She rose straight up into the air, still watching with mocking gaze. He caught at the hem of her dress, pulled with every ounce of despairing strength. The dress ripped. The girl went steadily up, accelerating, faster, faster.

He cried vainly after her, shouted in a delirium of rage, heedless of the steadily dropping entities that fell like great drops of rain around him. She was already out of hearing, growing smaller, tinier. Already she had pierced the enveloping atmosphere, was out into the unknown space beyond.

He stood stock-still, paralyzed. She was gone, vanished from sight. But above something else had happened. The three suns still pursued their compli-

cated pattern as before. But the great silver sphere, with its studded knobs, was fleeing out into the illimitable inane, quitting the multicolored trinity with a speed almost that of light.

The universe was no longer cerise; a dull, thick green pervaded everything, misted the atmosphere with its clammy hue. A startled cry burst involuntarily from Jim's laboring chest. The green orb was no longer infinitely remote. Its featureless smoothness blanketed the void, yawned down at him with dark, lusterless green. Even the colorful suns paled in the sinister shadow of its swift approach.

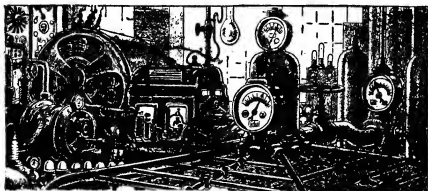
Jim Wentworth was alone—a helpless, futile human in an inimical universe. Draper and Nichols, or rather the beings who had invaded them, had followed Claire into the terrible void. Silence lay thick on what had been, moments before, a populous colony. No one seemed alive. And all-around him the viscous entities were still dropping.

He ran for the gun he had cast away. Blind, savage fury rocked his senses. Claire was gone, so were the others, carried to an unknown fate! He alone was left. Soon they'd get him, too. But he'd die fighting. He'd see if Earthly bullets couldn't smash these infra-universe devils. He'd show them!

A huge, crystalline mass swept straight for him. He had bent over to retrieve the automatic. The next instant he was infolded. The sticky substance twisted around his head, blinded him. He cried out, struck out vainly with threshing hands. It did no good.

Swiftly, the strange entity oozed into his body, absorbing through every pore. He was caught, irretrievably. He tried to run, couldn't. Volition, movement, swept away from him. He fought to retain the integrity of his identity against the invading mind. It was a hopeless fight. His limbs, his thoughts, his mind, were overborne. He was no more Jim Wentworth. He was—

(To be concluded.)



Science Discussions

As I proceed with the thought of the forthcoming transition of Brass Tacks to Science Discussions, three spontaneous bursts of approval lie before me. These three letters must have been mailed almost within minutes of the time last month's issue was available! They come from people new to Brass Tacks, and that is significant.

I want our whole vast reading circle to be interested in the Readers' Department of Astounding. I want every one of you to feel free to suggest subjects for discussion. I want to be able to list these subjects and perhaps assign one month to be devoted to each.

There is no reason why Astounding should not serve as an exponent of scientific advancement through the contributed discussions. I, for one, am beginning to feel a keen interest in the projected forum.

We have always faced an unwarranted bias on the part of a large portion of the educational world against "pulp" magazines as a class. This in spite of the fact that among our supporters I contact engineers, chemists, doctors, and more than a few college and university professors of the kindred sciences.

I am going to break down this opposition bit by bit until we are recognized as a distinct corollary of the sciences.

Does this mean a lessening of interest? Absolutely the reverse. Nothing on this terrestrial sphere of ours is more fascinating than the oriented studies of geology, entogeny, chemistry, and astronomy. Our fiction weaves a spell by projecting, through logic, the basic truths presented factually through the various educational media. If we supplement this fictional presentation with science articles in a popular vein, we shall be doing the greatest thing any magazine has ever accomplished.

TOP-NOTCH magazine has served as the cradle of modern literature. The great and near great of modern fiction have, almost without exception, found their way to fame through its pages.

We must so plan that twenty years hence it will be said that Astounding Stories has served as the cradle of modern science. It must be said that the great and near great in science first nurtured and presented their thoughts and theories through the Science Discussions pages. And it will be said, for it will be true!

Write to me now and give me your reaction to the transition. I still want your opinions on the stories—and will tabulate these responses in a chart if you wish it. But—have you a subject to suggest for Science Discussions?

The Editor.

Let's Get Down to BRASS TACKS



AN OPEN FORUM of CONTROVERSIAL OPINION

An Interesting Discussion Point.

Dear Editor:

May I take up my cudgel in defense of the Atlantis and Lemuria "myths" as attacked by Mr. Cameron Lewis in your October issue. To begin with I am not a science-fiction fan, although I have admired your magazine immensely the few times I have had the pleasure of reading it. Also I have not even read the story which Mr. Lewis ridicules, *The Return of the Murians*, so perhaps I should not even be writing this, especially as its length will probably preclude its appearance in Brass Tacks. Nevertheless, as an ardent devotee of the Atlantis idea I cannot let Mr. Lewis' remarks pass unchallenged.

Nine out of ten archaeologists who to-day delve in ancient Americana, and who inflict their platitudes upon an unrelenting world, ignore Atlantis. The tenth one—he who deigns to mention this wild and improbably theoretical country—ridicules it in most caustic terms and sarcastically paints a writer, such as I, in so childish a light that I hesitate to enter the arena against these modern Solons of science and of the "digs." Their ancestors existed during the Middle Ages and it was they who persecuted Galileo and laughed Columbus from the courts of Europe. They were the vast majority as they are to-day, and the public, then as now, lapped up the trite hokum they dished out.

Our present-day master minds smugly give us dates and data from the ancient past with such authority that one would almost believe they had personally lived at Ur or Cnossus or Chitzenitza on the dates they state. Blandly and blindly they dispose of documentary evidence, with a wave of the hand, as myth and legend. Any evidence dating prior to 2000 B. C. in the old world (aside from the Egyptian) and 400 B. C. in the new they choose to ignore as unreliable and untrue. They would have us believe that civilized man had scarcely existed in that state any longer before Christ than he has up to the present.

Unfortunately for these learned gentlemen, time will prove to us the pusiness of their conceptions regarding the age of civilized man. In the world to-day we are afflicted with hundreds of these so-called scientists and archaeologists with enough letters after their names to furnish Mr. Roosevelt with some new letter

combinations, who, year after year, take their lunches and repair to Cuzco or Chitzenitza and spend a pleasant vacation at some university's or museum's expense and then return to write scholarly discourses and learned volumes on a subject about which they know nothing. They invariably devote the first two chapters to the mystery of the Incas or the Mayas as the case may be, then compose reams of tripe informing us that the two civilizations do not date beyond the Christian era, and why they do not!

These twentieth century Solomons can tell you everything you want to know about Mayax and Peru except the most important item to wit: where they came from. Then they invariably fall back upon the good old Bering Strait bromide, despite the fact that there is not an iota of proof in Mexico or South America that man arrived here via the Strait. Nor is there any definite data linking American civilization with that of Asia, or any proof that man originated in Asia.

But seeing is believing to our Solons, as it was to those who said we could not fly or talk through the air or fire a cannon fifty miles. These gentlemen, who are so close to the jungle that they cannot distinguish the trees, continue to cram their alleged facts down our throats and blithely inform us that those of our number which questions their veracity are fools, children and imbeciles.

Mr. Lewis is right when he says that such a race as the Lemurians, had they existed, would have colonized the entire earth and taught its inhabitants. They did! I give you, Mr. Lewis, Mayax and Peru, Egypt, Greece and Crete; all offspring of Atlantis and Lemuria, or Mu, to give the continent its correct name. I do not propose to enter into a long discussion of the facts and thereby incur the wrath of the capable Mr. Tremaine. I imagine his wastebasket still contains room enough for one more bombastic mislve. Many writers whose talents are vastly superior to mine have covered the Atlantis "myth" very thoroughly.

Unfortunately, the champions of our faith, Donnelly, Churchward and others, are dead. Perhaps they were laughed at enough during their lifetime so they were glad to go. Perhaps the fact that they dared to stray from the beaten path and think for themselves is the reason that they are known as crackpots. True archaeologists do not deign to mention them or

their outlandish theories. It just isn't done. It wouldn't be "commercial." Yet, until the day when memories of Atlantis and Mu are actually found on the ocean floor—and that day is coming sure as shootin'—the theory which is obviously the most reasonable of all will continue to be the most enthusiastically received by all but a very few. But when that red-letter day arrives you will see a wholesale exodus of those narrow-minded scientific paragons who to-day so loudly prate that civilized man did not exist on earth 7000 years ago, a mere day in the age of our globe.

Civilization in Egypt reached its zenith at its inception. During the thousands of years of Egypt's known history, its civilization gradually slipped downhill and never attained the high status with which it first greets our amazed eyes. Are we to presume that the Bronze-Age man suddenly appeared in Egypt with a civilization in full bloom like a mysterious flower without roots? Are we to believe that the Mayas attained a degree of culture from 200 A. D. to 1300 A. D. equal to that of the Egyptians stretching back 5000 years? Are we to convince ourselves that the prehistoric remains in Manga Reva, Easter and other Pacific Islands—some so tremendous as to cover whole islands; some built of rocks not found on the islands on which they are located—are mere tribal temples erected during the past 500 years when the Polynesians themselves do not know from whence they originated?

Some 50 years ago there lived an enthusiastic archaeologist and quaint character named Augustus LePlongeon. He has been called the American Schliemann; and it is said that many of his discoveries were so revolutionary that he was afraid to publish them. Those that he did publish have caused our current scholars to warn us to take Mr. LePlongeon with a generous pinch of salt.

He had the temerity to announce that he had transcribed the Maya tongue, and that his story he compiled with so unbelittling that his compatriots and the stooges who carry on in their places to-day have ostracized him. The Maya writings are still undeciphered and will remain so as long as science refuses to recognize the truth. They profess to be able to read about 30 per cent and give us the Mayan calendar, a truly remarkable piece of work, taking the history of that wonderful race back some 20,000 years. It seems fairly obvious that as science can read thirty per cent of the Mayan glyphs they should be able to transcribe the remainder. Champollion had much less than thirty per cent to go on when he used the Rosetta Stone to read the hieroglyphics of Egypt.

LePlongeon tells us that Queen Moo of Mayax visited the Egyptian delta via Atlantis in 12,000 B. C. His authority is the Troano Manuscript, an authentic Mayan document now in the Spanish National Museum in Madrid, where it will probably be destroyed in the current civil war. If he has correctly transcribed this priceless relic, then it must be assumed as a fact that Egypt was an Atlantean colony, and both were sprung from the Eden of the race, the land of Mu, a Pacific continent sometimes called Lemuria and other names which occupied the space now filled with water and many islands.

The late Colonel James Churchward professed to trace this continent of Mu, the motherland, through its development, destruction and colonizations. The weakness in Colonel Churchward's three books is his reluctance, or inability to give us the origins of his theories or facts. One assumes that he is protecting the mysterious sources of his information, the Naacal tablets of Burma and monastic relics of Tibet, or that he is deliberately concocting a fascinating fairy tale. Notwithstanding, he produces at times logic which is irrefutable, and his Maya translations, based on LePlongeon and DeBourbourg, are most unusual, to say the least.

The modest student who sees our American past as only dating back some 500 or 600 years and then has the temerity to call it ancient, who can behold these unexplainable remains in Central and South America and still call the

Atlantis theory a myth, is making a grave error.

Admitting the fact that two or more peoples might conceivably learn to worship the all-embracing sun simultaneously; ignoring the similarity between the Egyptian and Mayan remains, the seven-headed serpent, the winged disk, the swastika, the elephant statuary remains in Mayax, where elephants have never existed, the legends of the white gods, the spelling of Aztec and Toltec names in which the word Atlantis invariably appears, either as a whole or in part; eliminating all these, the fact remains that not one of the so-called experts in the lore of Maya or Inca can tell you where the ancients originated to their own satisfaction, much less yours.

My home is in Kansas City, and biologists to whom I have talked assure me that 25,000 years ago my home was part of a shallow arm of the sea. They produce fossilized sea life to prove it. No one accuses them of hallucinations for asserting that which was formerly ocean waves is now dry land. Yet they tell us the same story as do the advocates of the Atlantis theory, that at some period between 30,000 and 10,000 B. C. a great cataclysm of probable earth-wide proportions occurred which produced drastic changes in the land area of the world. Millions of square miles of land sunk beneath the ocean and millions more emerged. Is it strange, then, that if man had attained a high degree of culture in those sunken lands we do not find his remains in lands so recently part of the ocean floor? If we can prove that a Golden Age and a Silver Age preceded our historic Bronze Age, then we have the answer to many of the riddles which confuse our well-meaning men of science and cause them the many sleepless nights which they do well not to admit.

When the Roman Empire fell, civilization fell with it, and we had a period of some hundreds of years known as the Dark Ages. When Atlantis disappeared like the serpent, extending about 4000 years in which man reverted to barbarism and only slowly emerged into our history's dawn. That I believe is quite understandable. It may be that these cataclysms have struck more than once in man's history. It may be that they will strike again. One has only to stop and muse upon what would happen here in America if a terrific earthquake and inundation should destroy most of our continent. I don't think we would remain civilized very long. Only Egypt and Mayax survived when Atlantis was destroyed and only their priesthoods retained the memory of the great past that had been theirs.

What caused the catastrophe was, of course, natural phenomenon, some great shrinkage in the earth's crust causing great convulsions and climatic changes such as ice and cold.

In conclusion, I would like to ask Mr. Lewis and other doubting Thomases these few questions. If they can be answered by the mediclue men of modern science, and others of their ilk, to my satisfaction, I shall be content to return to my shell and become one of the many who term the Atlantis theory "rubbish."

1. Can you, Mr. Lewis, tell me the origin of the name Atlantic, Atlas, Atlan, Olympus—or Atlantis, a derivation as per the ocean, the Greek mountain and the Aztec town?

2. Do you deny Plato's *Timæus*, and Solon's story of Atlantis as heard from the Egyptian priests at Saïs? Can a legend so universal be entirely a tall tale?

3. How do you explain the origin of the gods of Greece and their names? If these names are not race memories of early Atlantean kings and nobles, what are they?

4. How do you explain the colossal remains in the South Sea Islands?

5. How do you explain the elephant mounds in North America and sculptures in Mayax?

6. Nivens' discoveries as told of by Churchward and ignored by scientific America.

7. The flood legend which is universal everywhere except Egypt, which has a flood every year and was not affected by the flooding of the Mediterranean valley and draining of the Sahara as per H. G. Wells.

8. The volcanic sea bottom in the vicinity of the Azores and Canaries; mountain peaks of the Atlantis where crystallized lava has been dredged up; lava which crystallizes only in open air!

Answer these questions, my friend, and I'll admit I am what they call me, a diffusionist who's strayed from the straight and narrow, with an infantile mind taking childish delight in reading romantic rubbish in the Sunday magazine section of the "yellow" press. I shall be glad to admit, along with millions of my fellow citizens, that archeology, at least in America, is a dull, dusty science followed by still duller moth-eaten devotees who are so enveloped in the good old American inferiority complex that they cannot conceive of a civilization on this side of the Atlantic comparable to those "over there." Reluctantly, then, I'll be forced to admit that when Hannibal roamed Rome the ancestors of Quetzacoatl, if any, were savages, and the mysterious ruins of Tihaunaco on Lake Titicaca were hundreds of years in the future.

I am afraid, Mr. Editor, that my enthusiasm for my subject has let me get out of bounds and my letter has become a young book, far too long for publication in Brass Tacks. If such is the case, I would deem it a courtesy if you would forward this to Mr. Cameron Lewis whose address is 268 Shepard Ave., Kenmore, New York.

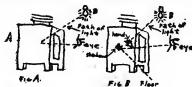
I shall continue reading your excellent magazine, and I hope to see more discussions on the Atlantis and Mu theories in the future. Discussions of this nature which may well prove to be facts instead of fantasy are, to my mind, of much greater moment than the aimless, vague imaginings of space and time travel.

Thanking you for bearing with me—if you did!—through this long ramble, I remain your Astounding fan.—James A. White, 3641 Central, Kansas City, Missouri.

Attention, John Desautels.

Dear Editor:

This is my solution to the question by John Desautels in the September issue:



The enameled refrigerator acts as a mirror; normally, light from Bulb B is reflected from the surface to the eye. See Fig. A. When a shadow is cast the light is no longer reflected; instead the reflection of the floor is seen—Fig. B.

The same effect may be observed in trying to look through a window on which a strong light is shining: only the window itself is seen. However, as soon as some object—such as a person's hand—casts a shadow, the light is cut off and you can see through the glass without seeing the glass itself.

In the short story *Follow The Rocket Trail*, this sentence is found: "The earth split from the snow-capped mountains of northernmost Alaska to the Gulf of Mexico, with a crack that could be heard many million miles out in space." Since sound waves are carried by air, and space has no air, how could the noise be heard?

A last word. *The House That Walked* belongs more properly in a weird magazine than *Astounding*.—Fred Munch, 200A Irving Park Boulevard, Chicago, Illinois.

Food for Thought.

Dear Sir:

As a reader of science-fiction magazines since 1927, I think I can safely say that *Astounding*

Stories is heir to the best traditions of that form of literature. I say this not only because of the novel and original ideas which burst out through its pages, but because the link to science is stretched to such an extent that there is plenty of opportunity to sharpen one's wits by picking out flaws where authors have overstepped the borders of logic and contradicted the very hypotheses they invoke. The September issue is a case in point.

Finality Unlimited, by Wandrel: Van Field Ruyter would have us believe that changes in time affect everybody, not simply those in a time machine. On May 5, 2005, he starts one of his six controls in motion, eventually dragging all six into the movement by resonance. This eventually takes the subjects back to the beginning of time, and they experience all the history of the world up to 2005, at which point they repeat the process all over again.

Presumably, the whole universe led up to that point in 2005, when it reverted to its state two billion years before. Nothing could exist in 5000 A. D., 500,000 A. D., or 1,000,000,000 A. D., because they would never happen, yet they do in this story. How?

Poliose The Rocket Trail, by Van Lorne: the author claims that if interplanetary commerce would unbalance the solar system by transferring mass from one planet to another. What he forgets is that every particle of mass in a planet has a centrifugal force and a gravitational pull in proportion to its mass. For example, a 2000-pound mass on the planet Mars is attracted by the Sun with a force of 6 ounces, and the centrifugal force is also 6 ounces. In removing this ton from Mars, the two forces would cancel out, and the planet's position would not be affected.

A certain amount of centrifugal force would have to be imparted to the ton to land it on Earth without crashing, and this could be applied by reaction blasts in free space. The only possible danger would lie in the impact of rocket blasts directly against a planet's surface, which depend on the projectile's speed and direction; but this has little to do with Van Lorne's idea.

Incredible Invasion, by Leinster: Steve Waldron discovers that the "Plague" is essentially a reorientation of electrons in each atom. Certainly they are not changed to any new Terrestrial direction, because electronic orbits lie in a great many planes, and form networks about atomic nucleuses generally known as "shells." If the atoms were rotated 90° into 4-dimensional space (if such exists), it is true that they would effectually disappear, since the particles would be visible only in the instants that they crossed the plane held in common by our own space and the new space into which they were rotated. But this would also be true if they were rotated not quite 90°, and there would also be invisibility in the oblique orientation which the author manifests by the paralytic state.

Mr. Desautels is worried because he can see the reflection of floor in his enameled ice box only when he puts his hand in the way of the electric light. Naturally: the reflection of the floor was always there, but the glare of the electric light, when reflected from the ice box, obscured the reflection of the floor, and his eyes could not perceive the floor until the glare was removed.—Leonard May, 97 Van Wageningen Avenue, Jersey City, New Jersey.

"Is Man A Machine?"

Dear Editor:

You may have my vote of approval on the great majority of the stories that you have published. With few exceptions, such as *The Fruit of the Moon-Weed*, they have all been very good, especially your novels—I'd call them short stories.

I was reading through a science book the other day and this title caught my eye: "Is Man A Machine?"

By the time I had finished reading this article I was not much wiser on the subject than

before I had picked up the book, but here is some of what it said:

"The most recent history of this controversy has been summarized by Nordenskiöld and Joseph Needham. They being experimental physiologists and psychologists, working on the implicit assumption that the laws of mechanics, physics, and chemistry were applicable to living matter, have continually increased the field within which mechanism seem an adequate explanation of vital phenomena (so help me, I'm not making this up).

It appears to me that right there is a good plot for a short story or a novel—maybe, though, it has been used in some story which I haven't read. Anyway this might create room for discussion among your readers.—John Smith, 615 North A Street, Monmouth, Illinois.

A "First" Letter.

Dear Editor:

This is my first letter to Astounding, although I have read and retained a copy of every issue of Astounding during both the old Clayton régime and yours. I wish to start out by saying that the old way was much inferior to any of your issues. I also realize it isn't easy to please every one, but here are some of my observations, as I choose to call them, about our magazine and everything in general concerned with it:

Your best contributors are Stuart, Schachner, Williamson, Campbell, Smith, Binder, Gallun, Fearn, Leinster, and, of course, Weinbaum would have been included. Truly, he was a great loss to science-fiction. Fearn is one of my favorite authors, but I think that his scientific explanations, even though they appear on the surface to be plausible, are rather lacking in vital facts and logic. He should either leave most of them out or really study the facts before attempting to write them. Dr. Smith is an excellent example of the latter.

If Van Lorne was more consistent he would also be very fine.

I do not remember Neil R. Jones, but I surely liked his different *Little Hercules*, although, said to relate, it is another of those stories that need a sequel. Incidentally, speaking of new authors, why don't you get David Keller? I would also like to see Ray Cummings.

Why doesn't Kruse write something that isn't so childish? His style is good, and I believe that he is capable of writing better stories. He should forget the W-62 series.

What has happened to Wandrel? His stories have changed from top-notch science to stories without any plausible ideas. I also must agree with other writers that Winterbotham pulled a Brody when he wrote *The Train That Vanished*—or maybe you pulled it. Oh, well, every one makes mistakes, and doubtless other readers liked it.

I entirely agree with L. P. Wakefield in that we ought to have another really high-powered science story such as *The Skylark Of Valeron*. What a treat if Dr. Smith would write it.

Science features such as John W. Campbell, Jr., is now giving us are so far superior to Fortes that a comparison can hardly be made.

Although I do enjoy Wesso, I'm glad you've got to using more different artists. After all, one doesn't like to see similar characters and scenery in every story. Practically all of your illustrations are very good.

You have my utmost gratitude. For one who saves his magazines, the trimmed edges are an enormous improvement. However, please don't increase the size of our magazine. It is much easier to handle and is more like a book as it is now. Concerning a twice-a-month magazine, you ought to know if it would lower the quality of the stories. A quarterly or a semiyearly would surely find one more eager subscriber, though.

Many readers have asked that the editor print remarks after each letter. That would not only shorten the letter space, but the com-

ments would have a tendency to become monotonous. How about putting in a science question-and-answer department? I notice that readers often send in problems which are not answered. This could be taken care of in the new department. It would also be pleasant to secure reproduction of the cover prints.

Hoping that our magazine keeps up its present excellent standard.—Larry S. Kirton, 3030 Glen Manor Place, Los Angeles, California.

We Can't Have a Sequel to Every Story.

Dear Editor:

Astounding Stories is the best science-fiction book on the market. My only regret is that you allow such good stories as *The Cosmic Trap*, *Frictional Losses*, *The Time Decelerator*, and *Little Hercules* to go without sequels. It's criminal to let those grand stories go without completely finishing them. Let's have sequels to them soon; especially *Little Hercules*, which is an excellent story.

The Comets was a fine serial. I enjoyed it immensely. *The Spawns of Eternal Thought* was fine, too.

Pacific, by Nat Schachner, was a good story, and so was *Finality Unlimited*, by Donald Wandrei.

I think that the Weinbaum memorial volume is a good idea. All of his stories are fine. This is my first letter, but you'll be hearing from me again. Keep up the good work.—Bob Lee Whitefield, 2301 Aldo Boulevard, Quincy, Illinois.

Another "First" Letter.

Dear Editor:

After a lapse of three or four years, during which time there were very few science-fiction magazines available at bookstores here, I had the pleasure of seeing your magazine out for sale a few months ago. I have been a constant reader of quite a number of science-fiction magazines in the past and I certainly missed them when they discontinued selling them here because of the customs act and the depression.

This is my first time writing you and I want to take this opportunity to express my appreciation for the clean-cut appearance which this magazine has because of its trimmed edges. Trimmed edges is a little thing in itself, but that alone takes Astounding Stories out of the dime-magazine class and places it way ahead of other science-fiction magazines.

I liked most of the stories quite well, the more outstanding ones being *The Comets*, *Mathematics*, *Entropy*, *Spawns of Eternal Thought*. There were two stories which I did not like, namely, *At the Mountain of Madness* and *The Shadow Out of Time*, by Lovecraft. This author goes in for too much description and detail, giving the story a long, dragged-out effect. I certainly do not wish to see any more stories of this type.

Of all the stories which I have read the ones that stand above all others are *The Skylark of Space* and its sequel, *Skylark Three*, by Dr. E. F. Smith. I have been hoping to see another in the Skylark series by Dr. Smith, but I have not noticed any, unless it is one by the title of *The Skylark of Valeron*. I came across this title in one of the letters in Brass Tacks. Please advise me how to get hold of this story, as I most certainly would like to read it, particularly if it is of the Skylark series. I strongly advocate more stories by this author.

With respect to your story illustrations: while the mechanical details are in most cases perfect, illustrations of human beings are mostly poor, looking more like pieces of wood. There is room for improvement there. I like Wesso and Paul best, although Paul's human beings are sometimes terrible.

I would like to see a quarterly issue published—and a good big one at that, so that you

will be able to get in one or two full-length stories. But don't publish it to sell for fifty cents. With respect to the monthly issue: I don't believe that I would like to see it published any more frequently than that.

Hoping that you will maintain as high a standard as possible and wishing you every success.—W. H. Hynes, 37 Newbury Street, Sydney, Nova Scotia.

We're Glad You Enjoyed Your Repast.

Dear Editor:

Having thoroughly consumed every edible portion of the October issue of *Astounding Stories*—The preceding statement is not to be taken literally but rather literally! I am hungrily awaiting the next issuance of monthly rations.

I shall now present to you a connoisseur's opinions of the October issue:

Godson of Almaru: this delightful dish was not prepared in the usual Gallun style, but oh! how I longed for a second helping. Nothing seemed lacking: a strong, but pleasing flavoring of human nature, just enough reality filling, and, of course, the whole dish was surmounted by exactly the right amount of science sugar coating.

Nightmare Island: a new chef prepares a surprisingly different second course, and although his base for the dish was a meat I care for but little (biology), I found this creation quite palatable.

Positive Inertia: rather tasteless.
The Time Entity: *Chefs Earl and Oto* sorta slipped this time—quite unusual. The flavoring (time) has soured with age, I'm afraid; it has been opened and reopened too many times.
The Sapprophyte Men of Venus: one helping was sufficient—that also is quite unusual; Mr. Schachner's cookery is usually irrevocably excellent.

Infinity Zero: Dry Martini—don't like 'em much—just sort of a balancer, though. Whets the appetite, I suppose.

Flight of the Typhoon: better than Kruse's usual run of salads.

Incredible Invasion: haven't tasted it yet—but I will.

The Double World: naturally, excellent.
Brass Tacks: a salad of widely varied composition of which lemons, rose petals, brick crumbles, and printer's ink comprise but the smaller portion.

Editor's Page: I hesitate to name it dessert; it's not large enough.—P. L. Lewis, 309 South Everett Street, Glendale, California.

In Favor of Short-short Corner.

Dear Editor:

You are certainly hitting in the ten ring with your July, August, and September *Astoundings*.

The idea advanced by R. W. Parr, while not new, is certainly very good. I, for one, am heartily in favor of a short-short corner for *Astounding*. The short-short-story corner which you conduct in *Top-Notch* would be a very good pattern to follow, although I do not think the prizes should be so high. The idea of a corner would be to secure new writers, and new writers can rarely come up to the merit called for by such high prizes. However, in any form, the addition of a short-short-story corner to *Astounding* would be most welcome.

How about it, Editor? Read a copy of *Top-Notch* and then write in to our editor and ask him to establish a similar story department. It is obviously a project that will help the advancement of science-fiction, and we know that the editor of *Astounding* is ever on the alert to bring out the best in science-fiction.—C. Hamilton Bloomer, Jr., 434 Guerrero Street, San Francisco, California.

Many Libraries Ask for Astounding.

Dear Editor:

What do people think education is anyway? Whenever I bring an *Astounding Stories* magazine into the classroom at school for a book report I am told that they are not fit reading material for boys my age. If one of those teachers would lose his dignity for a few minutes and read an *Astounding Stories*, I bet he would change his mind quick. I ask, can any of *Astounding Stories*' readers tell me one good reason why science-fiction is shunned by school and library? They are a lot better stories than a lot of junk we are supposed to read that you don't know any more about than if you hadn't read it. Science-fiction are good stories for any red-blooded American boy, and besides it gives them ideas about science, so that it is everybody read science-fiction we wouldn't have to wait ten years for rocket-plate travel.

Some of the scientific formulae and explanations may be hard for a boy of fourteen, but I get the idea and meaning of the stories. I have been reading *Astounding Stories* for two years and think the best magazine you put out yet was January, 1936, *Isotope Men* and *Smothered Seas* were swell.

I liked these stories of the September issue, as follows: *Finality Unlimited*—good; *Little Hercules*—good; *Deserted Universe*—swell; *The House That Walked*—swell; *A Beast of the Void*—good, except ending; *Follow the Rocket Trail*—good; *Song From the Dark Star*—good; *The Incredible Invasion*—never read a better one.

I think you should have more short stories and shorter serials and also a few pages of stories from the readers.

Astounding is on the market—Irvin Gaves, Jr., 711 Bigelow Street, Peoria, Illinois.

"Omnipotent, Invincible, Satisfying."

Dear Editor:

Having been extremely busy of late, we haven't been able to read any of the stories in the September *Astounding*; the illustrations and general appearance, however, lead us to believe that it is above the average in entertainment value. You're working hard on the magazine, Mr. Tremaine, and the fine results of your efforts can be clearly seen at a glance.

It's certainly great to see Dold back with us again. How that guy can draw! He seems even better now than he was before his absence, if such a thing is possible. We particularly liked his first, for Neil R. Jones's *Little Hercules*. And Wesso seems to be employing a new and startlingly different technique, which brings him up to the level of Dold and Marchion. Those three are tops!

Glancing through Brass Tacks: Arthur Mink: Abdul Alhazred and his forbidden "Necronomicon" seem to be bothering you considerably. You may be surprised to learn that your irritation is caused by—absolutely nothing! The "Necronomicon" is merely a product of the fertile brain of one H. P. Lovecraft, as my friend Alhazred. Furthermore, Lovecraft is not a hack writer. Hack—ye gods! He's one of the greatest masters of fantasy ever to grace a pulp's pages.

Walter Gormley: What makes you say that Marchion is "two-timing" *Astounding*, anyway? The guy's gotta make a living, you know; and why shouldn't he turn to other markets, if the other readers like him? Besides, would you say Frank B. Paul was two-timing his Uncle Hugo if he did an illustration for *Astounding*? But I gotta agree with you on Kruse.

Gerard Wilson: Yep, H. V. Brown, in his second illustration for *The Shadow Out of Time*, added one of *Proxima Centauri*'s plant-men. But you missed a couple others that Mr. Brown put in—for instance, there was one of the boog-bugs from *At the Mountains of Mad-*

ness and also none other than *Old Faithful* himself—minus his appendages.

John Carroll: Yours was one of the rare letters that say something. We agree with you that Lovecraft doesn't belong in a science-fiction publication, but you gotta admit that he does have a superbly masterful style. He is really one of the greatest living authors, as I believe I mentioned elsewhere.

Howard Round, Jr.: Despite the fact that you mentioned the name of that dope Willie Conover, Jr., in your letter, you did a fine job with your first. Keep it up.

Jerome Blaby: You stated that space travel has been established for years. Sounds interesting, if true; but please be a little more explicit. We'd like to hear more about it. We wanted to be the first two science-fictionists to reach the Moon—and it turns out that some one has beat us to it.

Miss Naomi Bloodworth: You aren't so dumb—you read *Astounding*, don't you? Well, that's enough for us!

Kenneth Newman: Really clever!

Carlisle Hays: You mentioned as your four favorite authors Don A. Stuart, Neil Schachner, Jack Williamson, and John W. Campbell, Jr. You are slightly mistaken: they are really your three favorite authors. Two of them are the same person. Which reminds us of a science-fiction book we once read: Stapleton's "Last and First Men." Figure it out.

The editor: Profuse compliments on your excellent editorial! "It speaks for itself," as the other magazines say.

In conclusion, *Astounding Stories* is omnipotent, invincible, and eternally satisfying. In other words, it's "All X."—Willie Conover, Jr., and Corwin Stickney, Jr., 28 Dawson Street, Belleville, New Jersey.

The "Average" Reader?

Dear Editor:

You have done pretty well in the September, 1936 issue. Yet seven of the stories end rather tragically. The other one is a serial. Why is this?

Finality Unlimited was an excellent story. I like thought-variants which give one a new outlook, a new concept, on the cosmos.

But when are we going to get Hawk Carse back again? Haven't you had enough demand yet to risk trying one or two of them? At least, try one, and see what the response is. It can do no harm, and possibly a lot of good. The average reader cannot understand really scientific stories, so why not try some of both kinds for the benefit of the prospective reader? Say, one "blood-n-thunder" yarn per month?

Needless to say, I hope this will be published in *Brass Tacks*. Who doesn't want to see his name in print, despite declarations to the contrary?—Hugh M. McKenna, Jr., P. O. Box 734, Seaside, Oregon.

Some Interesting Observations.

Dear Editor:

Just a few comments concerning the September issue:

I was greatly interested by *Finality Unlimited*, but could you please explain this? When Ruyter sent time several billion years ahead at 6:05 and brought it back at 6:15, as far as moving objects were concerned that time did not elapse. Everything continued as it left off at 6:05, that is everything but watches and clocks. Why did they jump ahead that ten minutes when nothing else did? If the watches had gone ahead those billions of years and brought back to a later time would not everything else have been so affected?

Somehow I just couldn't swallow *Little Hercules* as science-fiction. It was too much like a fairy tale and there was very little science

in it. That seems to be one of the main faults of present-day science-fiction.

Deserted Universe was one of the nearest things to a new idea that I've read recently. It was certainly an interesting speculation as to after-life.

It seems unlikely that such a group of master minds as were in *Follow the Rocket Trail* could be so long in doubt as to the cause of the planetary disturbance. I guessed what was the matter almost as soon as the trouble was mentioned, but that may be because I had no other weighty problems on my mind. When the Earth went to pieces in that story the sound carried many millions of miles, but I have been told that sound does not travel in a vacuum which presumably is present outside the Earth's atmosphere.

In *The Song From the Dark Star*, Egabl of Xarthese mentions the light year as a measure of time, but it is really a measure of distance. I liked the story a lot. When Anna Paulson was relating her dream it added a touch of mystery that was intriguing as was the dramatic manner in which Egabl related his experiences. I have to hand it to the authors that think up those un-Earthly names for characters of other worlds.

The articles by Campbell are good, but the same information may be had elsewhere. I buy science-fiction because it is something to be found in such magazines exclusively.

I would like to know why the *Mercury* at the heading of *Brass Tacks* is running in one direction and yet trying to thumb a ride on a space ship going in the opposite direction. Or am I wrong? As you probably know I have never seen a space ship and the front of this one may not be where I think it is.

Yours for better science-fiction, and—if this isn't wishing for too much—in the near future a quarterly.—R. A. Squires, Abwhance, California.

More About Atlantis and Lemuria.

Dear Editor:

I disagree with Cameron Lewis about some country like Atlantis or Lemuria not being possible. What about Egyptians, the Chinese, the Mayas (Indians that lived in Guatemala)? Did not these attain civilization before most? Maybe they (citizens of the lost country) were peaceful, interested only in scientific experiments. When man learned how to protect and feed themselves without it taking all their time, they thought about other things more. Perhaps an earthquake destroyed all traces of them (citizens of the lost country).

Why do you have serials anyway? Is it because it's the custom? Please stop it, I beg you. Or, if one is so good you can't refuse it, put it all in one issue.

A comment about the October issue: *The Saprophyte Men of Venus* and *The Time Entity* disagreed on what was the fourth dimension.—Alec Jackson, Kansas City, Missouri.

We're Glad You Did.

Dear Editor:

Well, at last I've taken time to write to you. I simply had to after reading your magazine so often. Some readers tell you your covers aren't efficient, others disapprove of your small size—but I want to tell you frankly and straight from the science-fictional heart that I wouldn't give one *Astounding Stories* for all of your rivals since they started. Oh, there simply aren't enough words to express my opinion. Some readers are rather obstinate in admitting how well the magazine goes over, but if you stopped the magazine altogether, what would they do? Why, there would be a broken heart.

I have been reading your magazine since *The Monster of Mars*, and think the magazine is great. I hope it stays that way for the rest

of my life, Mr. Editor. Let me congratulate you on having the best science-fiction magazine on the market.

Well, you've heard the motto now listen to the defects: bring it out twice a month. Please! Keep Dead, that's all.—Norman Garrison, 87 Pennsylvania Street, Bridgeton, N. J.

Here's a Brain-twister.

Dear Editor:

I would like to offer a suggestion which I believe would meet with approval from many readers. As you are doubtless aware, many of our science-fiction fans are also pretty good mathematicians, for how else could they read, or write intelligently about scientific subjects if they did not have some knowledge of mathematics. This group, I say, does not only enjoy a good science story, but would also enjoy a good hard problem. So why not create a department in which you would print a few problems a month, and give us something to sharpen our wits on. The department would soon become self-supporting, for almost every one has some problem which he would like to test on his fellow-readers.

For instance, here is one that gave me a good deal of grief. I just feel mean enough to wish to pass it along and let the next fellow get a few headaches.

In a certain town it began to snow before noon, and continued snowing at a constant rate all day. At noon a crew of men set out to clear a near-by highway, and after working two hours cleared three miles. They then worked two hours more and only cleared one mile additional. The amount of snow falling during the last two hours of the snowing was the same as during the first two miles. In other words, it is assumed the crew clears equal volumes in equal times. Now the question is: At what time before noon did it begin to snow?

Is what do you say to this suggestion, Mr. Editor? I'm sure you will find a ready response from many of our friends. And, by the way, it would also discourage the constant repetition of "I like this story" and "I don't like this story." For my part I read what interests me and the rest I leave alone, because I know some one else may like what does not appeal to me.

As long as I have been a science-fiction fan, and that dates back to the first issue of Amazing Stories, I never wrote one letter of criticism to any editor. I feel that if the editor is on his toes he will use it to get good stories, and if not, he will find out about it from his balance sheet soon enough. Hoping you will consider the suggestion, I remain yours for science.—Francis L. Miska, 413 Spring Street, Ansonia, Illinois.

Page Raymond Z. Gallun.

Dear Editor:

On reading *Godson of Almaro* by Raymond Z. Gallun, I was astonished at the lack of scientific knowledge displayed by the author. In supposing the Moon being made suitable for human existence, Gallun completely ignores several facts well-known to all students of science. First, in order to retain enough worth to support life, as we know it, a world not only requires heat and light from an outside source, but must also possess some internal heat. The Moon, as the author admits, lacks heat of its own, being cold throughout. Secondly, the following considerations will show the inability of the Moon to retain either water vapor, or an earthly atmosphere.

The critical velocity an object needs to escape from the control of the Earth's gravitation amounts to about 7 miles per second, and in the case of the Moon, to about 1 1/4 miles per second. According to the Kinetic Theory of gases, as developed by Tyndall, Boltzmann, and Maxwell, the molecules of gases are continually

flying in all directions, with velocities varying with the nature of the gas and its temperature. The maximum velocities of the chief constituents of the atmosphere, oxygen and nitrogen, are both well above the critical velocity on the Moon—oxygen having a velocity of 1.5 miles, and nitrogen, 2 miles per second.

To substantiate this theory is the fact that no free hydrogen may be found on the Earth, its molecular velocity (7.4 miles per second) being sufficient to send it beyond the Earth's pull.

It is possible that the Moon would be able to retain these gases temporarily, due to the collisions of the rapidly moving molecules, but when the time mentioned in the story had elapsed, the atmosphere would be too rare to support human life.—E. Emmet Cummings, 7013 Corbett Avenue, University City, Missouri.

October Issue One of the Best.

Dear Editor:

I want to congratulate you on your October issue of *Amazing Stories*. It is by far one of your best issues. Why is it there are so many criticisms of *Amazing*? He is one of your best authors. His stories are well written, always have a good plot, and have plenty of science-fiction in them. Most authors go along with wild stories of impossible things.

Here is the way this month's stories rate with me: *Godson of Almaro*—very interesting and well-written; *Nightmare Island*—very good; *Positive Inertia*—good; *The Time Battery*—excellent; *The Double World*—superior; *The Incredible Invention*—very good so far; *The Super-ship*—*Ship of Visions* and *Flight of the Ypsilon*—fair; *Infinitely Far*—common.

I have been reading *Amazing Stories* for two years, and will certainly continue it your stories will stay up to entertainment, as well as in science-fiction. Thanks for the smooth edges. It certainly improves your magazine. Why don't you report some of your old stories written by Wicksman? Ask the readers what they think of that idea.—James W. Miller, Box 87, Myrtle Point, Oregon.

Wants More Science.

Dear Editor:

Although I have been reading your magazine for about three years, this is the first time that I have written to it.

Amazing Stories is the best science-fiction magazine on the market but just the same it is not as good as it could be. You call your stories "science-fiction," but that does not make them scientific. As a matter of fact, most of your stories lack nothing but science, that science is an essential factor in all stories of that class.

Your authors take an idea, which they think has something to do with science, and write a story around that idea, which does nothing to make the reader ponder over any part of its contents.

Of course, I do not wish the authors to cram the stories with scientific formulae and equations. I could get the same and better information from textbooks, but your authors should try to weave the scientific information into the story in an interesting way, so that the story does not become too dry.

There has been great improvement in *Amazing Stories* during the war. First the smooth edges, then the scientific articles. If only the stories were a bit more scientific, *Amazing Stories* would be a really first-class magazine.

Finally, I would like to correspond with any one in America, of about fifteen to seventeen years of age, interested in chemistry and physics.—Rudolph Katz, 2344 Joyce Street, Johannesburg, Transvaal, South Africa.

A Comet—Rising!

Dear Editor:

Have you ever watched a comet as it suddenly appeared on the horizon and slowly ascended, till you wondered when it would overreach its peak? I have, at least figuratively speaking, and rarely has such an ascension been followed with more enjoyment than that of your—or may I say "our"—magazine's comet, with its blazing tail of Brain Turb. You and your staff certainly deserve a great deal of credit. You fared a hard job; you went to work on it; now the work is paying dividends.

I don't intend to criticize the magazine, because there are others, much more capable than myself, who do. I am one of those ideal beings—born your point of view at least—a positive reader. But I remain positive only so long as I am satisfied, and when I'm not, I don't like it. I just quit. It needs no elaborating when I say that my desk has seen Astounding Stories monthly for the past three years.

I suppose requests are almost inevitable in a fan letter, so I include two—who am I to prove an exception in a time-honored Brain Turb custom? They aren't, I should imagine, very difficult, so I ask with confidence in the result. In fact, I don't believe the result would change so widely from if I hadn't asked.

Please leave Brain Turb as it is and don't change it, not even in the slightest detail, because it is really perfect now. And don't let the successful character of the stories deteriorate, no matter how you improve them in authors, quantity or class.

I don't suppose I shall write again, so I'll say goodbye, just telling you you have one more strict and solid well-wisher behind you while your comet rises and when it reaches its peak, from which I hope it will never fall.—Bill Keenan, 10 West 10th Street, Cherry Chase, Maryland.

"The Incredible Invasion"—Then Two Years of Silence Broken.

Dear Editor:

To begin with, the reason I sent in to Brain Turb was to give a busy chum for Murray Leinster's *Incredible Invasion*. Of all the good stories I have ever read in your magazine, that is undoubtedly the best. To further prove my enthusiasm, I will say that in the two years in which I have read Astounding, I have never written to before. The plot is sound; there is just enough science, love, mystery, and suspense in it. All in all it's a wonderful story.

But now for the rest of the stories: *Gods of Almaraz* and *Paradoxes of Time* were, to my opinion, the two best in the issue. The former had an original, well-written plot, while the latter had an absorbing touch of humor to it. The *Time Paradox* was fair, but pretty hackneyed. The *Paradoxes of Time* was good, but not outstanding. *Hypercube Island* was too much like *Proxima Island* to rate high. If there is one thing I hate, it's imitation. *Paradoxes of Time* is to be placed with the two best I have already named. *Flight of the Typhoon* was terrific.

What do you keep Krue for, anyway? I have never liked his stories, and this was the worst of the lot. Please, please, take out that series of science articles by Campbell. Paul Murray in Brain Turb said we put all that stuff in high school yet, and I still know it.

Well, I see they're still yelling about Leinster's *At the Mountains of Madness*. I agree with the majority: I think it was overdone. Likewise for *The Shadow out of Time*. More, uninteresting plot, too many horrors, stream-of-consciousness, monstrous. Drive it out, drive it out.

Brain's covers are superb. Woe is best for interior work. Marchenko is better than Dill. Dill is fair. Thompson is terrible.

I beg you to issue a quarterly: I beg you to

put this in Brain Turb, and I beg you to correct me.—Henry Baumgardner, 2933 Outway St., N. W., Washington, D. C.

New Authors vs. Old.

Dear Editor:

I have read science-fiction stories for a number of years, and as time passes I find them more interesting. I have noticed in numerous letters that the writers thought the old authors were the best, but in my mind the modern authors take the cake.

Let us consider the fact that science-fiction ideas are becoming harder to get without having as a base some other idea. You know as well as I that writing a story to satisfy every reader's taste is well nigh impossible, especially for the new and amateur writers.

Wellington was the best example of the perfect fiction writer. He always had a new idea to give to the reading public. For instance, who but he would have thought of incorporating the lovely word, "Proxima," into such a story as *Proxima Island*. I had to look the word up. It might enlighten a number of other readers to do the same. But to finish with this, I ask: why does some of the readers keep complaining about the age of a story's plot. As far as I don't give a hoot about the age of a story's plot. If I like a story I don't go driving back into my memories to see whether it's a new idea or not. If I don't like it—well, I don't like it. So what?

Editor, why couldn't you add 60 pages to Astounding and make the price 25 cents? With that extra 60 pages you could do many things. One idea you could use is the one put forth by Lytle Dahlstrom in the October issue. He said that you should have some material every issue in a while. He went on to say that a picture could be printed and let the readers give their own ideas on the picture and write a story. As prizes, you could give the winning stories and make the give a subscription to Astounding. That's just an idea, but you could put a lot more to fill out 60 pages, and I think the readers could give a big bonus for such a move. Why don't you consider it?

Mr. Sedgwick states that he thinks editors do not care about the number of pages in the magazine; but you are just, but that if the number of pages were taken off, it would be no good, and I'll bet you would be noticed more if it was put on the magazine back. I say that the October issue doesn't have it on the back. Why not put it there?

To Cameron Lewis: Thanks for the little paragraph to me. As you said, the mystery cleared up when I read the story—I saved it all before reading the serial—but you'll have to admit that cover looked crazy, even if they were on a strange planet.

Don't publish a quarterly. Haven't you enough trouble trying to satisfy the readers of Astounding now? Look what you would have if you published a quarterly. I believe in making the present magazine bigger and better.

I certainly hope that John W. Campbell will be able to carry on his great series of articles on the solar system. They are the best yet.

The October issue of Astounding is very good. The *Incredible Invasion* gets better to every issue, and the welcome sight of a thought-varying reviewer me to the fact that you haven't forgotten to continue them.

Hypercube Island was excellent and well deserves the name it has. The memory of it remains as some particular motion picture does, like some important incident in one's life. It gets rather horrible in places and the writing is so vivid that you feel as if you are one of the characters.

Now has come the time when you should lead them eyes to the fact that this becomes better in the home market. As, with proper advice, and the hope that the magazine may remain on and on, I remain, Sincerely, Fred H. Squander, A. C. A. V. S., Kelly Field, Texas.

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